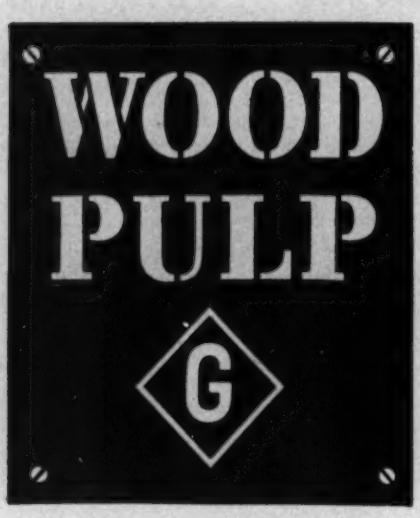
Paper

JULY 27, 1951

ARE YOUR ANIONS BOTHERING YOU?
... see page 16
HAVE YOU CONSIDERED INFRARED HEATING AND DRYING? ... See page 22



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1. **High efficiency** over a wide range of resin-to-pulp ratios.
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4. **Convenient pH control,** with acid, alum, or mixtures of these.
5. **Not critical** to sulfate ion concentration.
6. **Available** in tank car quantities.

Introduced only recently, UFORMITE 700 has already won acceptance in commercial production of Army map paper, heavy weight bag stock, box board, toweling, glassine and twisting tissue. But thanks to our production and raw-material situation, you can still get UFORMITE in tank-car quantities! Your sample is waiting; where shall we send it?

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THE RESINOUS PRODUCTS DIVISION

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Paper TRADE JOURNAL

VOL. 133 JULY 27, 1951 No. 4

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GEORGE E. LOCKWOOD
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NEXT WEEK

Read All About It! What? The Ammonium Bisulphite Pulping Process, of course, the most interesting development in the industry in some time. Its Application and future in sulphite pulp manufacture are outlined in an article by T. E. Detcher and R. M. Jones of the Barrett Division of Allied Chemical and Dye Corp.

REMEMBER THESE DATES

SEPT. 6-8: American Pulp & Paper Mill Superintendents Assn., New York, Canadian Division, meeting at Saranac Inn, Saranac, N. Y.

SEPT. 14-15: American Pulp & Paper Mill Superintendents Assn., Northeastern Division, meeting at Poland Spring House, Poland Spring, Maine.

SEPT. 14-15: American Pulp & Paper Mill Superintendents Assn., Northwestern Division meeting at Northern Holiday Resort, Mavenesco, Mich.

SEPT. 16-19: American Institute of Chemical Engineers, Regional Meeting, French Lick, Ind.

SEPT. 20: American Pulp & Paper Mill Superintendents Assn., Michigan Division, Fall Meeting at Hotel Harris, Kalamazoo, Mich.

SEPT. 26-28: Alkaline Pulping Conference of the Technical Assn. of the Pulp and Paper Industry at the John Marshall Hotel, Richmond, Va.

OCT. 10-12: American Pulp & Paper Mill Superintendents Assn., Southern and Southeastern Div's., George Washington Hotel, Jacksonville, Fla.

OCT. 15-18: 6th Engineering Conference, Technical Assn. of Pulp and Paper Industry, General Oglethorpe Hotel, Wilmington Island, Savannah, Ga.

OCT. 29-31: National Foreign Trade Convention, Waldorf Astoria, New York City.

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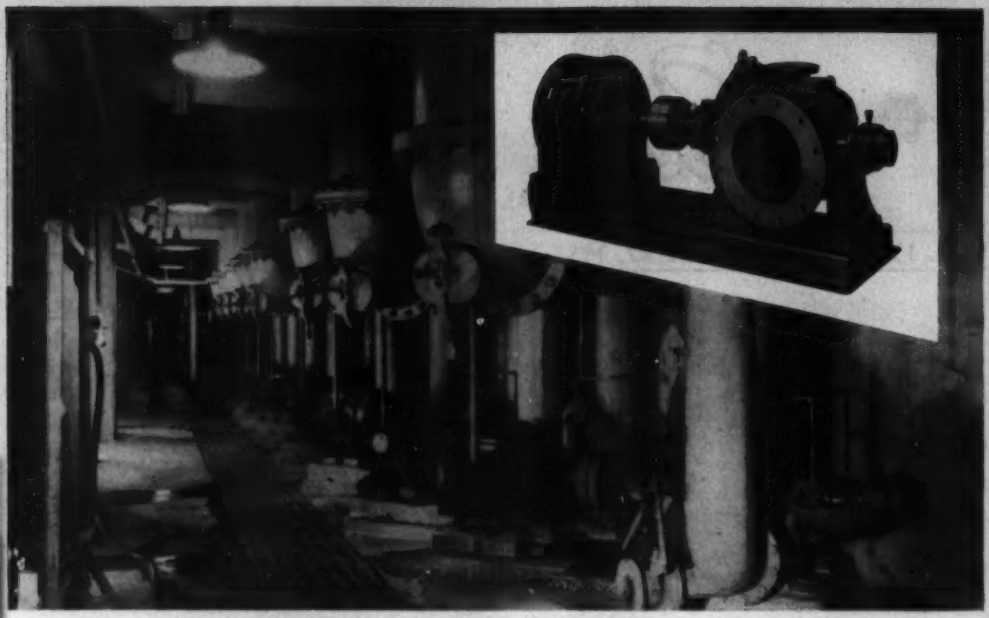

A Priceless Extra For Pump Buyers

The above pumps are on the vats at the new Sutherland mill in Kalamazoo. They are Miami Class A white water pumps.

The pump in the inset is a Miami Class HMS—a pump capable of high consistency pumping—up to and beyond 11% depending on mill conditions.

Other Miami centrifugals include the Class AV—D—DV—DS—HM—HMSS—Ju—Agi-flo—L—JL—LV—M. Each will meet some special pumping requirement. Some are horizontals, some are verticals. All are available in all required sizes.

There is a lot of good practical mill experience behind these pump designs—thirty years of it—a priceless extra of definite value to the pump buyer.

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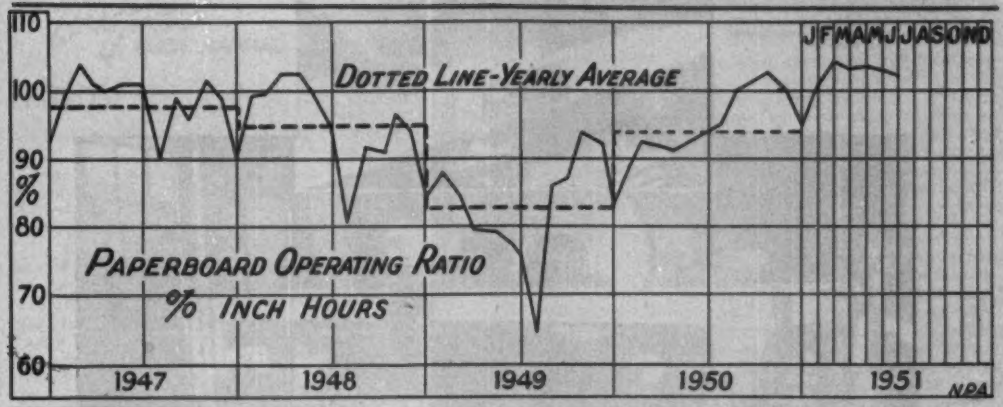
OUR BUSINESS



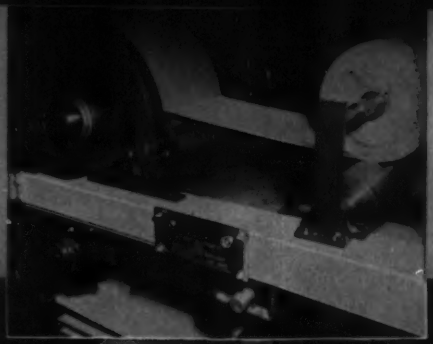
Brief of Important Figures

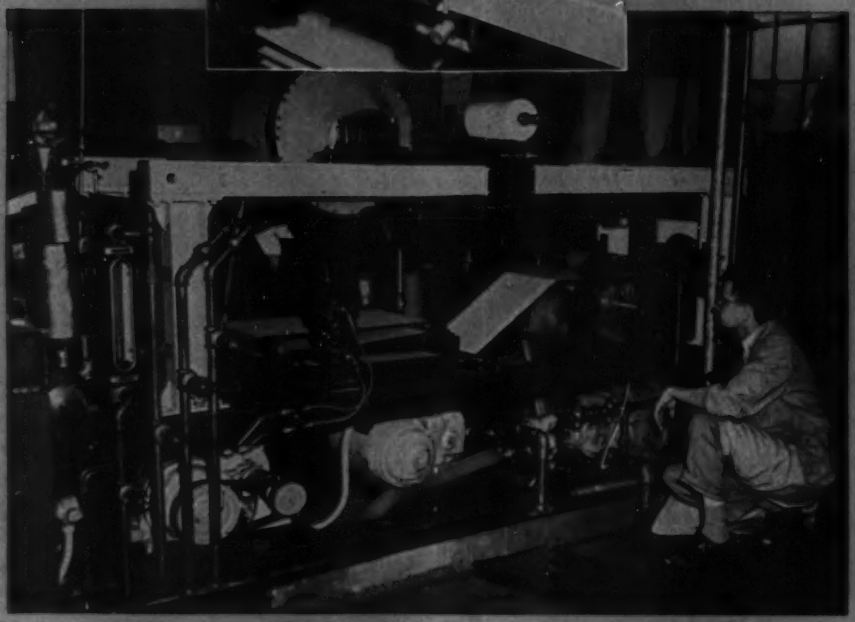
Source	Production	WEEK ENDING July 14, '51	June 16, '51	July 15, '50
APPA	Paper Production Percent Capacity[2]	95.6	101.5	92.9
	Unbl. Kraft Paper Production Percent	91.1	94.1	89.1
NPA	Paperboard Operating Ratio Percent Inch Hours	83	103	82
		May 1951	**Apr. 1951z**	**May 1950**
APPA	Paper Production[6] (Except Newsprint and Building Papers) ...Tons	921,000	874,087	842,500
	New Orders ...Tons	904,000	906,748	836,000
	Unfilled Orders ...Tons	996,500	1,016,525	535,065
	Shipments ...Tons	923,000	875,577	842,000
		June 1951	**[4]May 1951**	**June 1950**
NPA	Paperboard Production ...Tons	977,214	1,251,633	846,030
	New Orders ...Tons	873,807	1,264,120	855,016
	Unfilled Orders ...Tons	547,963	658,722	394,110
	Our Customers Activities Index[7]	**Latest Mo.[8]**	**Previous Mo.[8]**	**Year Ago[8]**
FRS	Manufactures Total Index	231	230	197
	Durable Mfg. Index	275	275	221
	Nondurable Mfg. Index	195	194	178
	Chemical Products Index	299	296	253
	Mfg. Food Products Index	154	150	150
	Printing and Publishing Index	185	178	174
ODC	Magazine Advg.-Printer's Ink Index	338	343	327
	Retail Sales Combined Adjusted Index	341.1	342.3	309.8
	Drug Index	232.1	241.2	224.6
	General Merchandise Group Index	327.5	316.6	293.0
	Grocery and Combination Index	431.0	432.7	378.8
	Prices Index			
BLS	Consumers Price Index[1]	184.6	184.5	168.5
	Wholesale all Commodities[2]	183.5	184.0	152.9
	Wholesale Foods[2]	185.7	186.6	155.3
	Commodities other than Farm Products and Foods[2]	172.1	172.4	146.4
	Wholesale Pulp and Paper[2]	196.2	196.3	155.4
	Purchasing Power of Dollar, Consumers Prices[1]	54.2	54.2	59.3
	General Activity Index			
FRS	Mfg. Production-Worker Payroll	429.4	433.6	337.2
	Unemployment Compensation Initial Claims (M)	983	719	1,543
	Miscellaneous Carloadings–Thousands of Cars	1,580	1,979	1,434
	Electric Output (Million KW hr.)	34,431	36,172	30,191
PTJ	Average 32 P & P Common Stocks as of July 21	$38.44	$37.26	$29.92

[1] 1935-39=100 Unadjusted Index
[2] 1926=100
[3] New 4-7 day basis.
[4] For Five Weeks.
[6] For details see APPA Monthly Statistical Summary—April 1951 Estimated Figures
[7] Latest Month Available on Request
z Revised figures.

Below, 10-inch Puseyjones Cylinder Tissue Machine. For tissue with a basis weight of 8#/2880 Sq. Ft., and toweling with a basis weight of 55#/2880 Sq. Ft. Speeds range from 5 to 30 feet per minute.

At right, close-up showing creping arrangement and wind-up.





Forms toweling and tissue continuously—*in the Laboratory*

A new experimental machine built by Puseyjones for Scott Paper Company, Chester, Pa., world's largest manufacturers of toilet tissues and paper towels, offers these important advantages over forming samples by hand:

(1) Permits continuous addition of chemicals
(2) Permits continuous change of the proportion of chemicals
(3) Assures close correlation of end sheet results with the production of regular machines
(4) Minimizes experimental production losses on commercial machines

To permit observation of internal flow and formation conditions, Puseyjones built the Cylinder Vat and Flow Spreader of Plexiglas. The single creping drier is electrically heated, using the radiant heating principle.

Research or production . . . Fourdrinier, Cylinder Machine, Yankee or a combination . . . whatever your papermaking problem may be, the experience and facilities of the Puseyjones organization are yours to command. Write us today.

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Est. 1848 — Builders of Paper-Making Machinery
Fabricators & Welders of all classes of Steel & Alloy Products
Wilmington 99, Delaware, U. S. A.

THE SIGN OF TRADE MARK SUPERIOR QUALITY

Paper TRADE JOURNAL

TRENDS

Office of the PAPER TRADE JOURNAL,
Wednesday, July 25, 1951.

Reaching a conclusion about a trend in today's market is difficult in the face of diverging opinions of honest, industry-wise men.

To the old-line companies, the pattern of thinking hews fairly close to the Administration's line of the late Spring: that pressure of demand would ease more than the traditional July-August lag, but that it would snap back sharply in September with the increased tempo of Defense production.

To the marginal producers — those whose adventures and misadventures into production agitate the raw materials market and shape the selling price for the finished product—the picture is different.

The summer's lull is upon us, with the disposition of many to accept it at face value and to await the sharp pick up in business by late August. Their business is good for this time of the year, they say; inventories are not too bad, could be heavier; all in all, it is turning out much as predicted. Others are trying to measure the extent of the summer's dip and are proceeding in Fall planning with great caution. This group also is studying the Government's latest reports on the possibilities of a market turn in the event of a Korean truce.

Change in Tack

A sharp change in tack is noted in the Government's approach to production planning since the late Spring.

"The overproduction of consumer goods was bound eventually to back up in retail and wholesale warehouses, and the break in prices for such items would have come whether a Korean truce had been discussed or not," Secretary Charles Sawyer last week told a *New York Times* reporter. If and when a truce comes, Government economists look for these developments, Mr. Sawyer said:

(1) "An attempt on the part of wholesalers and retailers to liquidate their present heavy inventories at a faster rate than they now are doing. This would mean the announcement of further and deeper cuts in accepted prices for the wide variety of consumers items which burden wholesale and retail shelves. The motive will be to unload their currently high price lines as rapidly as possible on the outside chance that replacement costs will dip.

(2) "Consumers, on the other hand, seeing a downward trend in the prices of goods they normally would buy can be expected to hold off purchases to see how far prices will drop. *The contest cannot go on for long because of normal demands for goods; and after two months or so, buying will resume at normal levels, inventories will melt away, and distributors will begin to shop for replacements. The hiatus can last only for a few months at most,* in the opinion of the experts," Mr. Sawyer said.

Reasons given by Mr. Sawyer for this conclusion is the extent of the Defense program which was running at an annual rate of $33 billion in June, and will be stepped up steadily to reach double that amount by June, 1952.

Production and the Hiatus

Missing from the report is any mention of production cutbacks which will be made necessary during the few months "hiatus." It is noteworthy that Mr. Sawyer is optimistic on that score: "a few months at most" he is reported to have said.

Because of uncertainties about this hiatus—defined by Webster as "a gap, especially with a part missing"—mostly production planners are buying cautiously. Should it be necessary to extend the summer production cutbacks, their raw material inventories will be sizable.

Raw Materials Markets

This caution provides the reason for the quiet trading reported in waste papers, cotton cuttings, bagging, chemicals, etc. Some easing in pulp absorption also is rumored.

Wood Pulps.— Nothing worthy of real note has happened to the wood pulp market since July 1 when M-72, the Government's pulp set-aside order became effective. The machinery of the order is getting into gear, but it is too early to see a trend.

The 45-day inventory limit clause, which becomes effective on September 1, is either being misinterpreted or a number of mills already have commitments and stocks to the limit of the regulation. Which is to say that all the Southern unbleached krafts offered by integrated mills have not been snatched up. Unchecked though creditable New York market rumors tell of unbleached kraft being fairly easy in supply.

Writing to his members about this inventory limitation clause, President Robert H. Evans of the Association of Pulp Consumers says:

"The 45 days excludes wood pulp in transit unless sorted in transit for the buyer's account. All grades of market chemical wood pulp may be lumped together in calculating the 45 days. . . . It is specifically indicated that 45 days is equivalent to 50 percent of a quarter's consumption at the current (permitted) rate. If a person's inventory already exceeds 45 days on September 1, 1951, he is not required to surrender any of it. However, no consumer can accept new deliveries if his inventory exceeds 45 days, or if the new deliveries would bring it above 45 days. (However, if his inventory is below 45 days he can accept a single carload as representing a minimum practicable delivery, even if this brings his inventory above 45 days.)

"In some cases, for legitimate reasons, it is reasonable to expect that the NPA will allow consumers to accept deliveries which would give them an inventory in excess of 45 days, but such cases must be the subject of an application for an exception. In few cases should a consumer simply refuse a delivery without notifying NPA, because this might result in the loss of such pulp from this market entirely. . . . The postponement of the effective date of this section to September 1, 1951 allows time for the completion of 2nd quarter overseas deliveries; it should be especially noted, however, that mills may not acquire any reserve production of integrated mills for the purpose of building inventories in excess of 45 days between July 1, 1951 and this effective date."

Provision has of course been made in the order for any unsold reserve stocks of pulp. It can be assumed they will be either subject to directive or, should the supply of pulp in the market become soft, the 3 percent figure would be decreased by NPA and its Industry Advisors.

A market inconsistency reported is that the mills cannot buy pulps offered to them at the ceiling price of $132.50, but they can—if they have storage space—take in pulp substitute grades of waste paper which currently are well above that price.

Waste Papers.—Trading in waste papers is at low ebb in the New York area. Mill holidays and slower rates of production have resulted in such heavy stocks of waste papers both at the mills and in packers' warehouses that they can take in no more.

With the exception of corrugated containers, (old corrugated) which at press time had been depressed $10 to $58 by one mill, prices were unchanged in this area. However, it is said that the undertone is extremely sensitive to an order; the price could be changed if the mills were interested in buying. *News* is particularly soft, followed by *mixed*, with high grades also somewhat affected.

Sloppy supply in *news* and *mixed* induced Detroit and Cleveland dealers to drop prices $2/7 this week. Chicago prices were unchanged at press time, but parallel action is likely.

—E. P. N.

Paperboard Production (Tons)*

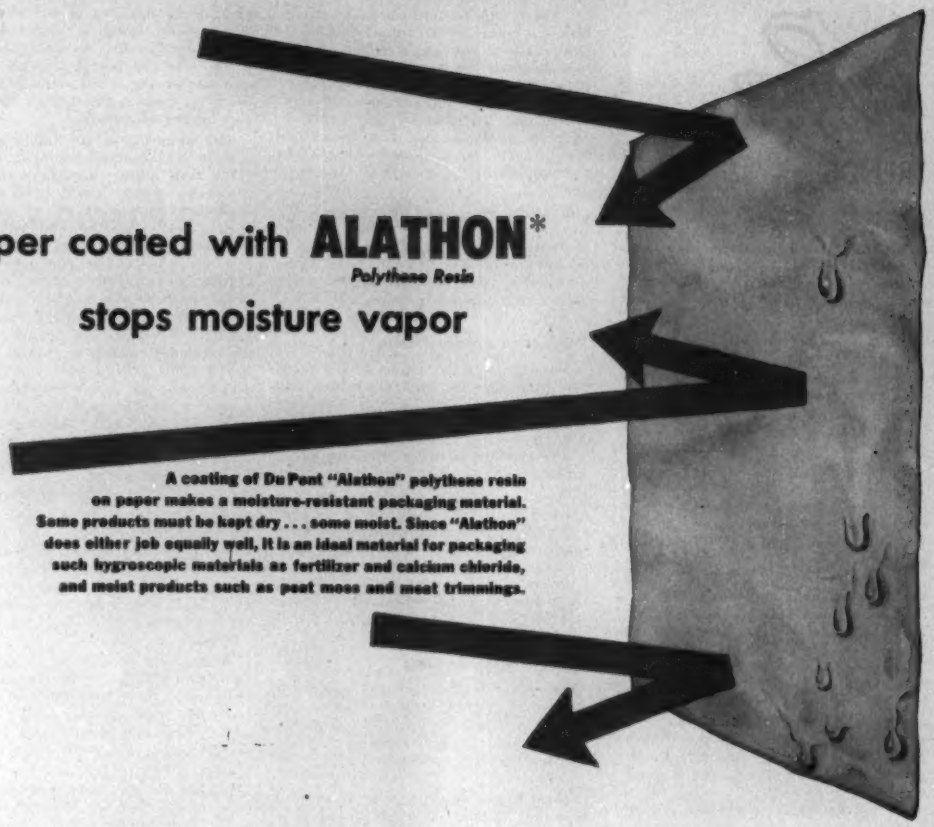
	July 14 1951	July 7 1951	July 15 1950
Production	200,938	157,069	186,959
New Orders	189,525	267,786	188,355
Unfilled Orders	638,852	657,277	489,490

* Source: NPA.

Paper coated with ALATHON*

Polythene Resin

stops moisture vapor



A coating of Du Pont "Alathon" polythene resin on paper makes a moisture-resistant packaging material. Some products must be kept dry . . . some moist. Since "Alathon" does either job equally well, it is an ideal material for packaging such hygroscopic materials as fertilizer and calcium chloride, and moist products such as peat moss and meat trimmings.

"ALATHON" IS SCUFF-RESISTANT

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"ALATHON" IS CHEMICALLY INERT

Package paper coated with "Alathon" gives long-lasting protection against attack by many chemicals. The resin itself is odorless, tasteless and non-toxic. Properties like these make paper coated with "Alathon" an ideal packaging material for foods of many kinds.

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Because of its outstanding chemical and physical properties, manufacturers and processors of many kinds of industrial and consumer goods will want paper coated with "Alathon" for their packaging material. Plan *now* to profit with "Alathon."

Present demand exceeds our production. But by planning now, you'll be able to move fast when "Alathon" is available. Write for more information about Du Pont "Alathon" polythene resin . . . or for technical assistance. We'll be glad to help you.

E. I. du Pont de Nemours & Co. (Inc.)
Wilmington 98, Delaware

News of the Week

Paper TRADE JOURNAL

PAPER CORP. ADDS EQUIPMENT

CHEBOYGAN, Mich. — Installation of a huge Hydrapulper and a number of large Jordans to effect greater hydration and insure continuous maximum production of high quality paper is now being made at the mill of the Paper Corp. of America.

I. Laurence Lesavoy, president, made the following statement: "The paper plant has continuously operated to 104 percent of capacity since its reopening last December. The company has been fortunate in securing the services of William H. Kenety as general manager, who is one of the most able executive managers in the paper and pulp industry.

"The company is rapidly proceeding with plans to enlarge production capacity which would include the installation of a semi-chemical pulp unit and some of the equipment for this unit has already arrived."

PRESENT 145 SERVICE AWARDS

Pacific Mills Ltd. recently presented long service awards to 145 men and women employes at a two-day ceremony at its Ocean Falls, B. C., plant. The combined service of the group represented 1340 years.

Paul E. Cooper, president of the company, assisted by R. R. Edwards, resident manager at Ocean Falls, presented the Indian Head pins to the employes.

Special speakers at the ceremonies were R. A. McDonald, executive vice-president of Crown Zellerbach Corp., San Francisco, and Ross Munro, noted war correspondent and Vancouver Daily Province editorial executive.

Single recipient of a 35-year service pin was William Anderson, the third person to get such an award in the history of the company. George H. McLaughlin and James N. Sutton earned awards for 30 years' service.

BROWN PAPER MILL ADDS UNIT

A complete new unit will be added to the Brown Paper mill at West Monroe. A rapid tax amortization for the $3,160,000 construction project has been granted by the DPA.

It will be the fifth big unit to be built since the huge plant was established.

Contract for the construction has been awarded to Morton C. Tuttle Construction Co. of Boston. W. B. Johnson is engineer in charge.

The new unit will be complete in itself and will augment the capacity of the paper mill by 25 percent.

Look at the Paper Here

Following the recommendations of the United States Civil Defense Administration, here are shown the contents of the recommended civil defense first aid kit, which every American family is urged to have on hand in case of unexpected disaster. As pictured here, the articles are wrapped in wax paper before being stored in an easily accessible place.

GRANVILLE PAPER BURNED

The Granville Paper Co., Newark, Ohio, was severely damaged on July 20 by a fire which reportedly started in the pit of the machine. This one machine board mill was recently purchased by Lesavoy Industries from Mark Osborn of Fulton, N. Y. The Osborn concern holds a chatel mortgage on the machinary and have sent a man to Newark to investigate. The daily capacity of the mill was 100 tons. The extent of damage is approximately $500,000. The loss was entirely covered by insurance. According to the insurance company, present plans are to rebuild. Arthur Price, vice-president of Lesavoy had no statement to make.

REPORT ON NEKOOSA EXPANSION

Nekoosa-Edwards Paper Co. reports sales in tons for the first six months of this year were 6 percent higher than the same period in 1950, and the average net sales price is up 14.5 percent over a year ago. For the year, following the start of hostilities in Korea, they had to resort to allocation as the demand for their paper exceeded their ability to produce. About sixty days ago there were signs that the demand was letting up some but in the meantime government has started buying more and now the general demand seems to be increasing again and there are no prospects of discontinuing allocations within six months.

Stockholders authorized a borrowing of $5,100,000, the present long-term indebtedness is $2,100,000. Under the plan authorized this bonded indebtedness would be retired and the additional $3 million authorized would aid the company in the improvement, expansion and modernization of its plants at Port Edwards and Nekoosa.

All of the changes made in the last decade in the Nekoosa mill are part of the pattern that has been long planned and is now being implemented. The major improvements in the Nekoosa kraft mill are progressing satisfactorily. The wood room conversion has been completed and the chip handling system is well under way. The alkali system, which is approximately 90 percent completed, will be required for the increased capacity but will also contribute substantial savings in operating economies. Three new digesters are being added and these are now in place. It is expected that one of these digesters will be placed in operation in October and the other two by the first of the year. The pulp screening equipment is in operation and the additions to the bleach plant are well under way. It is expected that this complete pulp mill program will be finished by the second quarter of 1952.

The new paper machine is the major piece of equipment in the Nekoosa program. It is being built by the Pusey & Jones Corp., Wilmington, Del. The machine is scheduled to go into production on August 1, 1952, unless unanticipated delay in equipment delivery postpones the opening. The capacity of the new machine will vary from 75 to 150 tons daily, depending on the grade of paper being run. This is roughly 2½ times greater than the capacity of any of the present Nekoosa-Edwards machines. In addition to its size and speed, the versatility of the new machine will add both operating economy and increased flexibility to the manufacturing schedule. Among the grades to be run on the new machine are Army wet strength map bond, writing papers, and base stock for treated food protective papers.

A new building to house the new machine, its stock preparation and refining equipment, control instruments, and part of the power distribution equipment is now under construction. The building will be of brick and reinforced concrete construction.

Power for the new machine will be supplied by a new boiler with a capacity of 110,000 lbs. of steam per hour and will match the existing powdered fuel boiler and the present steam generating equipment. Additional electric power required will be supplied by a 6,000 KW turbo generator that will use the high pressure steam generated by the new boiler facilities.

The program of expansion and modernization as outlined will increase the over-all capacity by approximately 20 percent.

UNBELIEVABLE BUT TRUE

"Hello, this is the So Sure Research Dept. We want to buy cellulose floc; who makes it, how much does it cost, and is it hard to get?"

After some talk of sources, the question was asked by the editor, "What are you going to use the floc for?"

The surprising use was to absorb moisture, that cellulose was well known for that purpose but the Research Dept. was open to suggestions. Silica gel was offered as a substitute, it was described, to which the comment was, "Never heard of it, but it's worth a try. Who makes it?"

The day was hot, humidity high, and a new batch of NPA orders came in; the phone rings again. "I got a great idea and would like your opinion. We have a new coating machine, and the boys find that its capacity is larger than we need, so we want to get new business. We think that we could buy plate stock, coat it with water and greaseproof varnish and sell it to the paper plate trade."

"Who are they, how much do they buy?" What! You say about 20 percent of our coating would be wasted in cutting discs from a roll. Is that bad? Oh, I see your point. We did not think of that."

JUNE NEWSPRINT REPORT

NEWSPRINT ASSOCIATION OF CANADA, MONTREAL

I. PRODUCTION AND SHIPMENTS in short tons: 2,000 pounds		JUNE 1951	JUNE 1950	JUNE Percent Change	YEAR TO DATE 1951	YEAR TO DATE 1950	YEAR TO DATE Percent Change
1. Canadian Production: including Newfoundland	mo. and year to date	464,332	440,967	+ 5.3	2,748,685	2,591,571	+ 6.1
	per working day	17,997	17,225	+ 4.5	17,779	16,894	+ 5.2
	Percent of capacity .	101.4	101.2		102.2	99.2	
2. Canadian Shipments: including Newfoundland	to United States	413,771	391,239	+ 5.8	2,383,714	2,107,433	+ 3.3
	to Can. Consumers .	29,226	29,046	+ .6	177,945	173,495	+ 2.6
	to Other Markets ...	32,043	20,492	+56.4	140,682	71,876	+95.7
	total: all markets ...	475,034	440,777	+ 7.8	2,702,341	2,552,804	+ 5.9
3. U. S. Production:.	mo. and year to date	94,073	88,420	+ 6.4	550,468	484,648	+13.6
4. U. S. Shipments:..	to U. S. Consumers .	96,056	87,499	+ 9.8	547,000	478,957	+14.2
	to Other Markets ...	960	2,429	—60.5	4,695	8,431	—44.3
	total: all markets ...	97,016	89,928	+ 7.9	551,695	487,388	+13.2
5. U. S. Imports from Europe:	*estimate; see Table 8	*22,600	12,967	+74.3	100,586	83,810	+20.0

II. CONSUMPTION AND STOCKS in short tons: 2,000 pounds		JUNE 1951	JUNE 1950	JUNE Percent Change	YEAR TO DATE 1951	YEAR TO DATE 1950	YEAR TO DATE Percent Change
6. U. S. Consumption:	estimated total	477,548	492,133	— 3.0	2,948,742	2,950,823	— .1
7. North American Stocks:	U. S. Consumers ...	675,033	528,184	+27.8	675,033	528,184	+27.8
	Canadian Mills	135,486	159,957	—15.3	135,486	159,957	—15.3
	U. S. Mills	7,014	8,074	—13.1	7,014	8,074	—13.1
	estimated total	817,533	696,215	+17.4	817,533	696,215	+17.4
8. A.N.P.A. Report:.. 525 Newspapers	Consumption	365,324	376,482	— 3.0	2,255,787	2,257,380	— .1
	Stocks (tons)	452,625	382,459	+18.3	452,625	382,459	+18.3
	Stocks (days)	37	30		37	30	

It was getting hotter, the subway was steaming but the evening was coming and the country was cool, run for the train.

The next morning refreshed and full of energy to tackle the government orders, when in comes a motherly woman, fan and bag in hand.

"How can we help you this morning?" is our greeting. "Young man (flatterer), I have a problem. I am a housewife, my husband is a lawyer. He has clients who need newsprint, he is too busy so I am out shopping for newsprint this morning. The library told me to come and see you. Can you give me the names of the mills who sell it? Then I can tell my husband who to give the order to."

"I am sorry, madame, but there just isn't any that I know of, because if we knew where there was any, we would have told the man yesterday. He wanted 20,000 tons, and was willing to pay up to $270 per ton for it."

"Good heavens! I only want 500 tons and I thought it was worth only $100 per ton."

"Please madame, forget newsprint, go home, turn on the fan, make a big pitcher of iced tea and drink a glass for me, there isn't any extra newsprint."

The ——— phone again.

"I am a stock broker, I am a subscriber, I have a question. Does the paper which is cut off of rolls, trim or waste, I think they call it, come under a price ceiling?"

Fantastic, isn't it, but TRUE.

CROWN NEWSPRINT UP $10

Crown Zellerbach has wired its contract customers that effective August 1 its newsprint price will be raised ten dollars per ton.

FINNISH NEWSPRINT PRICE

The U. S. price of Finnish newsprint will be advanced from $116 to $125 a ton for the months of August through December, 1951. Customers have been requested by producers' agents to accept the $9 per ton rise as a temporary expedient in Finland's battle against tremendous inflation.

A major reason given for the increase in the Finnish export tax on newsprint shipments which has cost the mills $9.80 per ton since April, 1951.

Finnish industry sees the era of boom prices about over and world markets beginning to stabilize. It is expected by them that the need for the export tax will pass by the end of 1951, when the price of newsprint will revert to the U. S. contract level — Canadian contract price, currently $116.

All of Finnish newsprint is sold on a long-term contract basis.

WHITE STAR PLANS DEFERRED

Plans for the erection of a pulp and paper mill near Prescott, Ark., have been indefinitely delayed. According to J. R. Bemis, vice-president of the White Star Paper Co., which was organized to construct this mill, the Certificate of Necessity recently granted was needed, but the big problem is the priority for building material. White Star is a subsidiary of the Dierks Lumber and Coal Co., Kansas City, Mo. Fred Dierks, president of the company, said the original estimate of construction cost had increased 30 percent. Earlier estimates of the cost ranged around twenty million dollars.

GOVERNMENT GOSPEL

Fringe Benefits Allowed

The Wage Stabilization Board proposed and Eric Johnston has approved a new regulation permitting paid vacations, holidays, shift differentials, premium pay, and call-in pay, regardless of previous wage increases under the 10 percent ceiling. It is conditioned upon the prevailing practice within the industry in which the employer operates, and cannot exceed any increases now prevailing in that industry.

Health, welfare, and pension plans do not come under this new regulation known as W.S.B. 13. It allows an employer to catch up with prevailing practice within his own industry. It is to be noted that Alexander R. Heron, on leave from the paper industry, was the only industry member of the board to approve.

Change CMP Allotment Symbol

NPA announced a minor change in its list of allotment numbers and symbols and DO symbols used in authorizing production schedules and making allotments of steel, copper and aluminum under the Controlled Materials Plan.

Beginning July 18 the allotment and DO symbol PM will be used to identify purchases of both controlled and non-controlled materials by controlled materials producers. Formerly, it applied only to the non-controlled materials.

Amend No. 1 to CMP Reg. 1

This amendment affects CMP Regulation No. 1 as follows:

Paragraph (c) of section 3 is amended to read as follows:

(c) No person who has received an authorized production schedule shall produce more than the quantity of the particular product or products provided for in such authorized production schedule. No such person shall purchase controlled materials or products and materials other than controlled materials for fulfillment of such authorized production schedule except by use of the related allotment and DO rating.

Buyers Subject To DPA Sanctions

Purchasing agents for business and industrial organizations, unlike domestic consumers, are subject to sanctions under the Defense Production Act of 1950 unless they have shown good faith, according to Harold Leventhal, Chief Counsel of the OPS.

"The act," Mr. Leventhal states, "is specifically made applicable, in terms of prohibitions, to *any person* who purchases, in the course of trade or business, in violation of the regulations. The *buyer* is not subject to the treble damage provisions, but he *is subject to the other sanctions of the act, from injunction suits to criminal prosecution in cases of wilful violations.*"

This provision of the National Defense Production Act, Mr. Leventhal continued, recognizes that in certain situations the buyer, as much as or even more than the seller, may encourage an illegal transaction, especially on commodities in short supply where the buyer feels that "price is no object."

The ultimate test, Mr. Leventhal wrote, is essentially the "good faith" of the buyer, since frequently there are circumstances under which he cannot know all the facts regarding the legality of a seller's price. He pointed out, for example, that ceilings under the General Manufacturers' order (CPR 22) are "based upon the materials and labor costs of the manufacturer, which in many, or perhaps most, situations would be beyond the knowledge of the buyer or the purchasing agent.

Mr. Leventhal warned, however, that a buyer cannot hope to obtain immunity by simply shutting his eyes to the transaction. If a buyer suspects a violation may be involved, Mr. Leventhal offered this advice:

"If he has any reason to believe a violation exists, he can ask for a clarification from the seller. Or, if he wishes to avoid that approach, possibly because of an indication that supplies might be withheld in retaliation, he can address his inquiries to the OPS. The name and identification of any person making such an inquiry will be withheld. . . ."

As for certificates of compliance, Mr. Leventhal recalled that when he was Assistant General Counsel of the OPA in 1942, he wrote the association that they might provide some evidence of good faith on the part of the buyer. But, Mr. Leventhal emphasized that what he had in mind was a certificate referring to a particular regulation, not just a rubber stamp saying, all prices are in accordance with applicable OPA regulations. Such a general statement, Mr. Leventhal contended, does not really add anything to the invoice itself.

While a certificate of compliance referring to a particular regulation would represent some evidence of good faith, Mr. Leventhal warned that any such certificate would not outweigh any other facts pointing to a violation.

Members of Pulp & Paper IAC

The NPA announced the membership list of the Pulp, Paper, and Paper Board Industry Advisory Committee as follows:

M. C. McDonald, president, Chesapeake Corp. of Virginia; H. Lee Rauch, president, Consolidated Paper Co.; W. Irving Osborne, Jr., president, Cornell Wood Products Co.; R. A. McDonald, exec. vice-president, Crown Zellerbach Corp.; George E. Dyke, president, Robert Gair Co., Inc.; Hugo Hanson, president, W. C. Hamilton & Sons; Cola G. Parker, president, Kimberly-Clark Corp.; Leo E. Croy, exec. vice-president, Marathon Corp.; J. D. Zink, vice-president, Hammermill Paper Co.; Sidney Frohman, president, Hinde & Dauch Paper Co.; H. G. Wintgens, vice-president, Hoberg Paper Mills, Inc.; Aubrey Nicholson, president, Hollingsworth & Vose Co.; W. B. Zimmerman, exec. vice-president, Howard Paper Mills, Inc.; Stuart Kay, International Paper Co.; Florence M. Lynch, vice-president, Pacific Paperboard Co.; Amor Hollingsworth, president, Penobscot Chemical & Fiber Co.; Sydney Ferguson, chairman, Mead Corp.; D. K. Brown, president, Neenah Paper Co.; Peter S. Paine, president, New York & Pennsylvania Co., Inc.; Rex Hovey, exec. vice-president, Oxford Paper Co.; John L. Riegel, president, Riegel Paper Corp.; W. J. Dixon, vice-president, St. Regis Paper Co.; Henry P. Schmidt, president, Schmidt & Ault Paper Co.; R. M. Buckley, Soundview Pulp Co.; George Olmstead, Jr., president, S. D. Warren Co.

NY OPS Moves

The Regional Office of Price Stabilization for New York State and northern New Jersey is now located on the fourth and fifth floors at 70 East Tenth Street in the John Wanamaker building. Its new telephone number is ORegon 7-1100.

The New York Regional Office is headquarters for Region II which comprises all of New York State and the northern part of New Jersey extending to the southern bounderies of Burlington and Ocean counties. It encompasses seven districts with district offices in Buffalo, Rochester, Syracuse, Albany, New York City, Newark and Trenton.

Its New York City District Office remains at 401 Fifth Avenue, telephone ORegon 9-4660, where copies of regulations are issued and data of business firms are filed.

Approve Certificates of Necessity

NPA announced to producers this week that it has recommended approval of applications for certificates of necessity to assure production of 2,400,000 additional tons of pulp annually, and is studying applications for another 650,000 tons, looking to a total expansion of 2,700,000 tons of pulp annually.

A list of certificates issued July 16 included White Star Paper Co., Prescott, Ariz., wood pulp, eligible, $15,481,201, certified, 65 percent; St. Regis Paper Co., Pensacola, Fla., wood pulp, $12,161,000 eligible, certified, 60 percent; and S. D. Warren Co., Cumberland Mills, Maine, pine pulp, $3,612,000 eligible, 65 percent certified.

ECA Authorization Issued

Country	ECA No.	Commodity Category	Amounts
Germany	09-591-00-6610	Sulfate pulp and/or kraft paper & bags (source U.S. or Canada)	$1,000,000
Greece	40-591-00-6668	Pulp, paper & paper products excl. newsprint or pulpwood	85,000
Greece	40-591-00-6663	Pulp, paper and paper products excl. newsprint and pulpwood	100,000
Italy	45-591-00-6624	Pulp, paper and paper products excl. newsprint and pulpwood	4,000,000
Italy	45-591-00-A069	Paper and paper products excl. newsprint and pulpwood	2,000

DO Ratings in Effect

DO ratings not converted to CMP orders are now taking second place in scheduling and delivery. The following DO's are exceptions and rate equally with CMP.

DO-22 Dept. Defense
DO-38P NPA
DO-41 Atomic Energy Com.
DO-45 Fed. Civil Defense, Security Agency, Gen. Services, VA., H.H.F.A., Dept. Agric., Public Roads, CAB, CAA.
DO-46 NPA
DO-47 NPA
DO-48 Dept. Int., Solid Fuels, DMA, Pet. Ad.
DO-49 Dept. of State
DO-51 NACA
DO-62 Coast Guard
DO-96 NPA

Foreign Sulfur Outlook

Apart from what was reported at the NPA conference, Commerce Department has received a series of reports from abroad on the outlook, in a continuing observation of the sulfur situation around the world. One such report, from Spain, said three shipments of sulfuric acid had recently gone to the United Kingdom, and Spanish trade sources were quoted to the effect that preliminary contracts between Spanish shippers and British importers call for export of 20,000 metric tons, with a considerable increased export figure under discussion. British companies also are studying Sicilian possibilities.

A Mexican report states that recovery of crude sulfur began at the Petroleo Mexicanos plant at Poza Rica, in April with an output of 100 metric tons per day, and an ultimate capacity of 140 tons, so that an export surplus may become available later this year.

Swedish Sulfur Cutback

Due to the Swedish sulfur import quota established by the International Sulfur Committee, a serious cut in sulphite pulp production is anticipated. The current quarterly sulfur quota is fixed at 11,600 tons against a normal consumption of 16,000 tons. The cutback represents about 150,000 tons of pulp as 90 percent of the sulfur is used for pulp production.

Consider Cut in Sulfur Allocation

NPA has under consideration a cut in the industrial allocation of sulfur. Currently the allocation is 100 percent of last year's consumption.

Wood pulp producers have been told that the cut has not been determined nor has the method been worked out.

If the past patterns are followed defense and defense supporting industries will get the major share.

FTC in Defense

Chairman J. M. Mead of the Federal Trade Commission filed with the House Committee on Monopoly Power a statement concerning the agency's role.

The Commission is concerned that big business has obtained a large share of the Certificates of Necessity because of the method of processing, i.e., in order of receipt. It is suggested that they be screened by a technical board so that C/N may be tied in with new technological advances, to insure increased efficiency and better utilization of critical materials.

FTC has completed three surveys to determine if industry understands and observes the various NPA regulations and orders. At the request of OPS, it is expanding its financial surveys of profit data, and will include in the future such items as the cost of labor and materials. This information will be for price control purposes, renegotiation policies and for excess profits tax work.

Water Resources Division Created

To make effective use of the nation's water resources so that the needs of defense plants, military reservations and civilian population are adequately met, the NPA announced creation of the Water Resources Division and appointment of Harvey S. Howe of West Orange, N. J., as its Director.

Responsibility of the Water Resources Division will include (1) ground and surface water supply, transmission, pumping, treatment, storage and distribution for domestic and industrial use, and (2) liquid wastes and sewage collection, pumping, treatment and disposal, whether from domestic or industrial sources.

The division will prepare programs to assure an adequate supply of water and sewage services to support defense and essential civilian activities. It will distribute allotments of materials, supplies and equipment required for the programs, recommend the issuance of priorities necessary to carry out the programs, and act in cases where special "spot" assistance is required.

CMP-5

As of July 6, NPA Regulation 4 which assigned DO-97 MRO is cancelled.

CMP-5 has taken its place under the new CMP system. In place of DO-97 two symbols will be used. MRO will be used for Maintenance Repair and Operating Supplies which contain Steel, Aluminum and Copper. DO-MRO covers all other materials except those on the prohibited list. This list remains the same as NPA Reg. 4 as amended. It includes Paper, Paperboard and products thereof, all chemicals, etc., and no symbol or rating can be used for their procurement. All orders placed before July 6 carrying DO-97 for delivery during the third quarter are considered to have an MRO rating.

Any adjustment or exceptions granted under NPA Reg. 4 are extended and apply to CMP-5.

Liberalize Industry Advisor Rules

The House passed practically without debate Sec. 108 of HR 3871. This means that if finally approved the rules under which the Industrial Advisors can work with NPA and OPS, can be liberalized and made more effective.

The present rules while allowing cooperation, restrict the freedom enjoyed under OPA and WPB, to the detriment of the defense effort.

Polyvinyl Chloride Resin

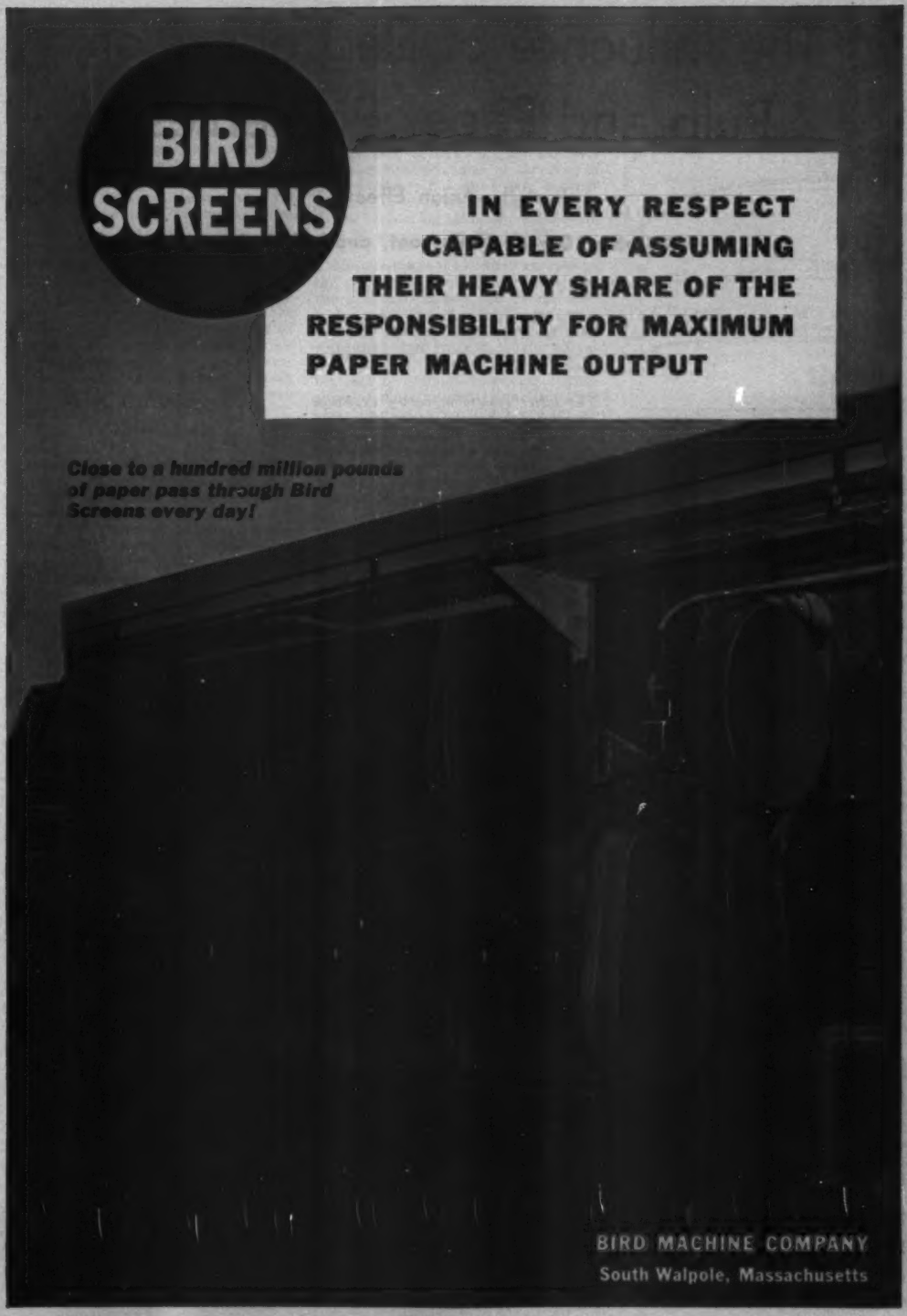
Members of the Polyvinyl Chloride Resin Industry Advisory Committee discussed proposals for a tailored regulation for their industry with OPS officials but withheld recommendations on the type of regulation they prefer pending further deliberation and decision of Congress on control legislation for the coming year.

The industry is now pricing under the GCRP. Committeemen said they were experiencing no hardship under GCPR because the price of their products had been fairly steady and adjustments had been made before the price freeze. They said their industry customarily sold at substantially uniform prices and the effect of CPR would be to disturb this uniformity.

Nickel Allocated

NPA informed the Stainless Steel Industry Advisory Committee that nickel will be allocated to the industry for manufacturing stainless steel products beginning with the September melting and continuing thereafter on a monthly basis. Allocations will be necessary, NPA said, because of the scarcity of nickel in relation to the requirements to be met under the Controlled Materials Plan.

Some 3,000 farmers in this country grow trees over and over again on the same land for continuing wood crops under the American Tree Farm System.


BIRD
SCREENS
IN EVERY RESPECT
CAPABLE OF ASSUMING
THEIR HEAVY SHARE OF THE
RESPONSIBILITY FOR MAXIMUM
PAPER MACHINE OUTPUT
Close to a hundred million pounds
of paper pass through Bird
Screens every day!
BIRD MACHINE COMPANY
South Walpole, Massachusetts

The Influence of Electrolytes on Pulp and Paper Properties*

Part II—Anion Effects

W. E. Cohen,[1] Gwenneth Farrant,[2] and A. J. Watson[3]

Summary

In continuation of the investigation of the influence of electrolytes on pulp and paper properties, the following anions, derived from sodium salts in all but one instance, have been studied:— chloride, bicarbonate, nitrate, acetate, hydroxide, sulphate, phosphate, hexametaphosphate, citrate and ferrocyanide. A water-washed unbleached eucalypt kraft pulp was used and the beating period was 4,500 rev. in the Lampen mill.

Strength properties, air resistance and freeness were generally sensitive to the presence of the electrolytes in the process water. With the exception of sodium hydroxide, with which the effect of pH was highly significant, and sodium hexametaphosphate which produced extraordinary effects, all electrolytes influenced these properties in a manner which could be attributed to the action of a univalent cation. The optimum concentration was 0.008 N. No relationship between valence of anion and pulp properties was revealed.

At its optimum concentration (0.001 to 0.002 N), sodium hexametaphosphate effected some remarkable changes on handsheet properties, which were greater than those produced by other electrolytes at any concentration. With increasing concentration its influence decreased until at a concentration of 0.016 N, it was similar to that of other electrolytes.

The influence of sodium hexametaphosphate on a pulp can be interpreted in terms of its known effects on colloid systems, viz., its dispersive action, and its ability to sequestrate bivalent cations into soluble complexes. The former leads to greater homogeneity in sheet formation and hence to greater strength properties and air resistance. The latter results in cation exchange on carboxyl groups within the pulp, with sodium ion replacing the calcium and magnesium normally retained by a water-washed pulp. The pulp is thus relatively more hydrophilic and is accordingly more responsive to beating.

Handsheet properties of water-washed pulps are insensitive to bivalent cations simply because these pulps retain calcium and magnesium in combination with carboxyl groups. Contrary to an earlier statement, the role of carboxyl groups in relation to electrolyte effects is now considered to be of primary importance; it is merely obscure in water-washed pulps.

Introduction

In an earlier paper *(1)* it was shown that the influence of cations on the properties of a water-washed pulp varied with their valence and concentration. However, only in the cases of air resistance and freeness could this influence be directly and generally related to valence. Thus, whereas the development of strength properties was enhanced by univalent cations and retarded by trivalent and quadrivalent cations, the influence of bivalent cations was not significant.

As evidence in favour of a correlation of the observed data with the carboxyl contents of pulps was unconvincing, an attempt was made to interpret the data from the electrokinetic standpoint. Although this seemed to offer a tangible explanation of the effects of most cations, the apparent insensitivity of water-washed pulps to bivalent cations has made this interpretation doubtful and, at the most, only the effects of cations on air resistance and freeness can be interpreted fully on this basis.

Some of the reasons for the difficulties in interpreting cation effects are revealed in the present paper which discusses the results obtained from a study of a range of anions. With one exception, the anions were derived from sodium salts.

Experimental Details

Materials

Pulp.—An unbleached eucalypt kraft pulp, received in wet-lap condition from Australian Paper Manufacturers Ltd., was repeatedly slushed in soft town water and dewatered in a "whizdrier" until the wash water was colorless. With black liquor residues thus removed, the pulp was washed in the same manner with distilled water until its ash content could not be reduced further (0.64 percent). The de-watered pulp was hand-crumbled and stored, until required, in the moist condition in a refrigerator maintained a few degrees above freezing point. For the purpose of determining whether or not some effects observed with sodium hexametaphosphate were specific to eucalypt pulps, an unbleached spruce sulphite pulp ("K crown B") was used.

Electrolytes.—The electrolytes were selected to include anions of different valence,

- anions normally found in pulp mill process water,
- electrolytes frequently added to stock as pH buffers,
- electrolytes to provide a range of pH, and one having special application.

It was considered that all these conditions could be accommodated by the following:

- sodium chloride
- sodium bicarbonate
- sodium nitrate
- sodium acetate
- sodium hydroxide
- sodium sulphate
- di-sodium phosphate
- sodium hexametaphosphate
- sodium citrate
- potassium ferrocyanide.

All electrolytes were used at concentrations of 0.001 to 0.016 *N*. In a subsidiary study relative to its optimum concentration, sodium hexametaphosphate was used at concentrations of less than 0.001 *N*.

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* Presented at the Fourth General Conference of the Australian Pulp & Paper Industry Technical Assn.

[1] Senior Principal Research Officer, Wood Chemistry Sec., Div. of Forest Products, C. S. I. R. O.

[2] Technical Asst., Wood Chemistry Section, Div. of Forest Products, C. S. I. R. O.

[3] Research Officer, Wood Chemistry Sec., Div. of Forest Products, C. S. I. R. O.

Procedure

For each replication, pulp was soaked, disintegrated, beaten in the Lampen mill, and diluted for freeness tests and for sheet sampling in distilled water containing the appropriate concentration of the electrolyte under investigation. Soft town water was used in the actual sheet-making operation.

On each working day one replication of each concentration of the electrolyte under consideration (including zero concentration) was carried out. Concentrations were studied according to an experimental design which provided for the isolation, within each anion study, of carry-over effects resulting from, for example, the influence of the electrolyte on the surface condition of the Lampen mill. This procedure involved six replications at each concentration, and six working days for each electrolyte. The electrolytes were studied successively.

Soaking, disintegration and sheet-making operations conformed with the "unbeaten test" procedure of the Pulp Evaluation Committee on the Technical Section of the Paper Makers' Association *(2)*. All samples were beaten for 4,500 rev. under conditions recommended for Lampen mill operation in Australia *(3)*. Sheets were tested at their equilibrium moisture content corresponding to 65 percent relative humidity and 21°C. Tests for caliper (T426m-46), burst (T403m-47), tensile (T404m-47), and air resistance (T460m-49) were made according to TAPPI standards methods indicated. Tearing resistance was measured on the Australian-built dynamic tester according to recommended Australian procedure *(4)*. In some of the later work, folding endurance was measured according to the TAPPI standard method (T423m-45).

Results

Influence of Anions on Pulp and Paper Properties

Results of the systematic studies of the ten selected electrolytes are illustrated by *Figures 1, 2* and *3*.

Based on the extent of their influence on the properties of the water-washed eucalypt kraft when this was processed in water containing any one of them, the electrolytes fall in the following order:

(i) sodium hexametaphosphate
(ii) sodium hydroxide
sodium citrate
sodium bicarbonate
di-sodium phosphate
sodium acetate
(iii) potassium ferrocyanide
(iv) sodium nitrate
sodium sulphate
sodium chloride

With the exception of sodium hexametaphosphate and sodium citrate, they are also approximately in the order in which they affected the pH of the stock. Thus, with those of group (ii) the pH of the stock was greater than 7.0 at all concentrations; with potassium ferrocyanide it was less than 7.0 at the low concentrations and greater than 7.0 at the high concentrations; and with group (iv) it was less than 7.0 at all concentrations. In the case of sodium hexametaphosphate the pH ranged only between 6.7 and 6.9 over all concentrations, and in the case of sodium citrate it ranged only between 7.2 and 7.5 over all concentrations.

The following general conclusions may be drawn from the results.

Concentration.—With few exceptions, the properties significantly affected by the presence of any one of the electrolytes in the process water were bursting strength, tensile strength, air resistance, and freeness. After allowing for the significant effect of pH in the case of sodium hydroxide, regressions of these properties on electrolyte concentration, other than those for sodium hexametaphosphate and, to a lesser extent, sodium citrate, are similar to those previously reported for sodium and potassium chlorides *(1)*. Thus, with increasing concentration, there were gradual and significant increases in bursting strength, tensile strength and freeness, and decreases in air resistance, until an optimum concentration was realized (generally at 0.008 *N*). Effects can be attributed to the univalent cation in association with an anion the effects of which are not specific except in the cases mentioned.

Valence of anion.—It will be seen from *Figures 1, 2* and *3* that the behaviour of sodium ion (and/or potassium ion) was similar in the presence of all anions except citrate and hexametaphosphate. Hence there appears to be no correlation between the valence of the anion and the influence of an electrolyte on pulp properties. This is consistent with the electro-negative nature of cellulose fibres from which it would be expected that cations rather than anions would have the greater influence on surface properties.

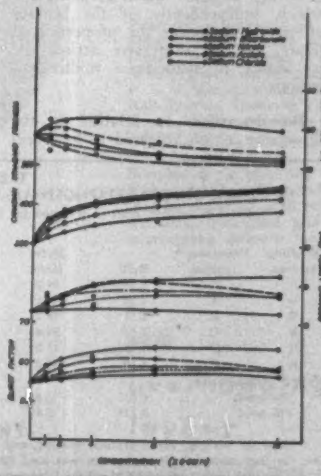

Figure 1—Influence of Univalent Anions on Pulp and Paper Properties

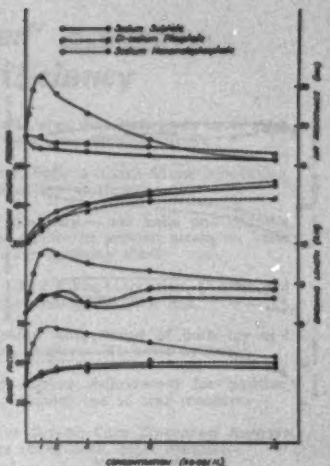

Figure 2—Influence of Bivalent Anions on Pulp and Paper Properties

pH.—The pH of the stock varied with the anion under consideration, i.e., from 5.0 (sodium chloride, 0.016 *N*) to 10.4 (sodium hydroxide, 0.016 *N*). However, except with sodium hydroxide, there is no definite correlation between pH and the properties of treated pulp. In the case of sodium hydroxide the slopes of the regressions of bursting strength and tensile strength on concentration, are steeper, and those of freeness and air resistance flatter, than are the slopes of the corresponding regressions for other electrolytes (see *Figure 1*), thus indicating the secondary effect of pH superimposed on that of the cation. It is probable that swelling, fibrillation and water retention are enhanced by the higher pH, and that consequently more and stronger bonds are established within the sheet. It is to be noted that even at the higher pH values the regressions of properties on concentration, although displaced vertically, follow much the same trend as did those previously reported for univalent cations (see *Figure 1*).

Sodium citrate.—The effects of sodium citrate cannot be accounted for entirely by pH or sodium ion. It is possible that the large citrate anion with its secondary hydroxyl group may facilitate beating. The enhanced strength development produced in the presence of sodium hydroxide may also be attributed to hydroxyl groups, but further investigation would be necessary to confirm these suggestions.

Influence of Sodium Hexametaphosphate on Pulp and Paper Properties

The properties significantly affected

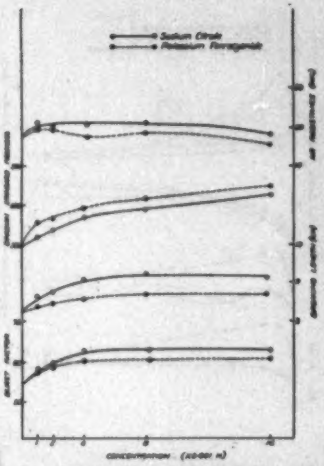

Figure 3—Influence of Trivalent and Quadrivalent Anions on Pulp and Paper Properties

by sodium hexametaphosphate are air resistance, bursting strength, tensile strength and freeness. Their regressions on concentration are illustrated by *Figure 2*, and should be compared with the corresponding regressions for sodium hydroxide and sodium chloride (*Figure 1*), these being the extremes of all the other anions studied. In the case of hexametaphosphate, points corresponding to concentrations of 0.0005 and 0.00025 *N* have been included in the plots and serve to substantiate the conclusion that the optimum concentration for this electrolyte is between 0.001 and 0.002 *N*.

Figure 2 shows that air resistance, after reaching a value which is 70 percent greater than that obtained with distilled water, decreases rapidly with increasing hexametaphosphate concentration until at 0.016 *N* it is the same as that for sodium chloride at this concentration. Bursting strength and tensile strength also increase rapidly to values which are respectively 20 percent and 13 percent greater than the corresponding values developed in distilled water, and then decrease with increasing concentration until they correspond more or less with those for sodium hydroxide at concentrations of 0.008 to 0.016 *N*. Freeness values with hexametaphosphate have the typical regression on concentration, are not abnormally influenced at low concentrations and fall within the range observed with anions whose stock systems have a pH of less than 7.0 (group (iv)).

The effects of sodium hexametaphosphate are extraordinary for the following reasons:

(i) They are much greater than can be accounted for solely by the sodium ion and hence cannot be considered normal cation effects.

(ii) Their maxima occur at much lower concentrations than do those of other sodium salts.

The effects of sodium hexametaphosphate are comparable with those of sodium ion only at the higher concentrations investigated (0.008 to 0.016 *N*), and consequently cannot be fully explained as cation effects based on electrokinetic properties. The extraordinary air resistance and strength properties are not consistent with an accelerated beating effect; otherwise the latter should have been revealed by bulk values. These, however, remained constant at between 1.48 and 1.50 over all concentrations. In addition the freeness values remained within the range observed with other sodium salts. These data therefore show that factors other than those commonly associated with the electrokinetic effects have to be considered when assessing the results obtained with sodium hexametaphosphate. Consequently an alternative explanation of these observations has been sought in terms of the specific properties of this reagent.

Action of Sodium Hexametaphosphate on Pulp

Hatch and Rice *(5)* have summarized the properties of hexametaphosphate as follows:

> "Apart from possessing definite surface active properties of its own, hexametaphosphate has the ability of forming soluble complexes with many multivalent cations; their concentration is thereby reduced to such an extent as practically to eliminate their agglomerating action on numerous colloid systems."

Freeman *(6)* has expressed the opinion "that thick spots in paper formation originate from groupings of negative particles about positive nuclei. The tendency with the use of polyphosphates is to break down these groups with consequent improvement in formation."

Thus there appear to be two properties of sodium hexametaphosphate which, independently of the beating effect, can influence the properties of paper, viz., its dispersive action and its ability to sequestrate multivalent cations.

Dispersive action.— In relation to the dispersive action referred to by Freeman, handsheets made from pulp processed in the presence of sodium hexametaphosphate, especially at or near its optimum concentration, have been observed to have a noticeably more homogeneous formation than have those sheets made from pulp processed in the presence of higher concentrations of this reagent or in the presence of other electrolytes. Furthermore this observation is confirmed by the air resistance values. Consequently the better formation which results could quite easily account for the greater overall strength properties of these handsheets. The influence of sodium hexametaphosphate is all the more remarkable because of its low concentration in the sheet machine. The sheet sample 5000 ml.) contained hexametaphosphate at a concentration of 0.001 *N*. This would be diluted fourteen times (to 71.) in the sheet machine with soft town water, thus giving a concentration of approximately 0.00007 *N*. Although this is an extremely low concentration, it is nevertheless within the range in which sodium hexametaphosphate has been reported to exert its maximum dispersive action *(5) (6) (7)*.

Cation sequestration.— An unbleached eucalypt kraft pulp was washed successively with soft town water, with a 0.001 *N* solution of sodium hexametaphosphate in distilled water, and finally several times with distilled water in order to displace the hexametaphosphate solution. It was then evaluated in distilled water, in a 0.001 *N* solution of sodium hexametaphosphate, and in 0.008 *N* solutions of sodium, magnesium, and cerous chlorides. For comparison a sample of the pulp was washed and evaluated in distilled water. The beating period in all cases was 4,500 rev. in the Lampen mill. The results are shown in *Table I*.

From a comparison of the distilled water evaluations of the water-washed and hexametaphosphate-washed pulps, it is obvious that the pretreatment with sodium hexametaphosphate considerably enhances the pulp's response to beating with respect to strength properties and air resistance. At similar bulk values, i.e., 1.54 and 1.55, the hexametaphosphate-washed pulp has approximately 13 percent higher burst-

TABLE I
INFLUENCE OF HEXAMETAPHOSPHATE-WASHING ON A EUCALYPT KRAFT PULP
(Unbleached eucalypt kraft pulp beaten for 4,500 rev. in the Lampen mill, after washing)

Washing medium	Processing * medium	Bulk	Burst factor	Breaking length, km.	Tear factor	Air resistance, sec.	Freeness C.s.f., ml.
A	A	1.55	44.2	7.19	98	7.3	362
B	A	1.54	50.1	7.68	105	9.1	336
B	B	1.51	58.9	8.55	110	13.6	375
B	C	1.52	54.4	8.21	109	8.1	436
B	D	1.55	45.7	7.01	105	4.7	510
B	E	1.59	34.2	5.88	87	2.8	556
Diffce. significant at							
5% level		*0.012*	*1.3*	*0.30*	*4.5*	*0.65*	*9*
1% level		*0.016*	*1.8*	*0.41*	*6.2*	*0.89*	*13*

* Used for soaking, disintegration, beating, and dilution for freeness tests and sheet sampling, but not for sheet-making; soft town water was used for the latter.

A—distilled water; B—0.001 *N* sodium hexametaphosphate; C—0.008 *N* sodium chloride; D—0.008 *N* magnesium chloride; E—0.008 *N* cerous chloride. Each value is the mean of five replications.

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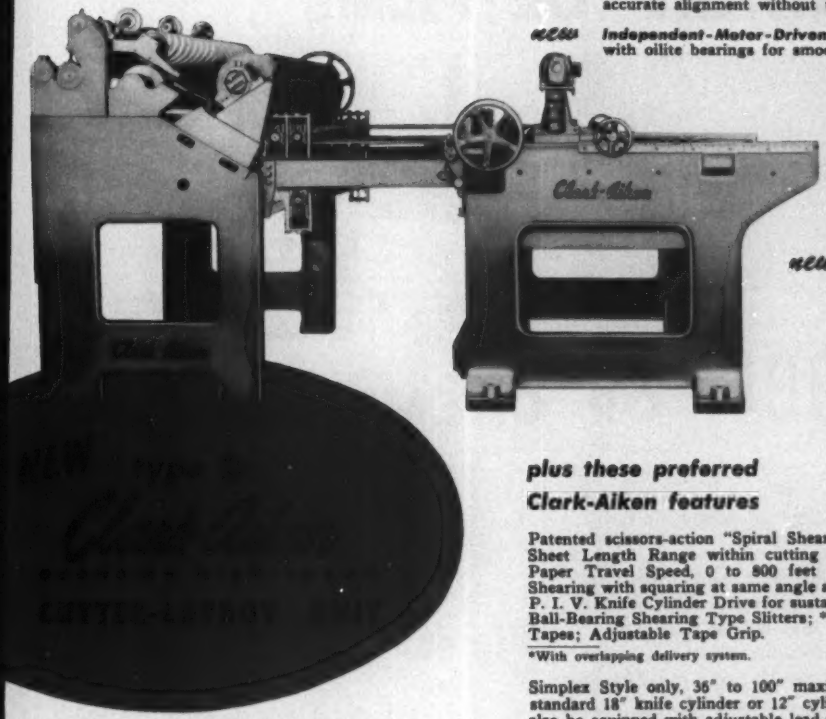

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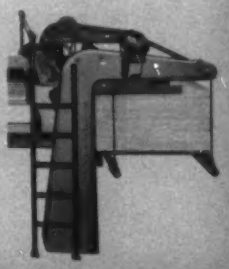

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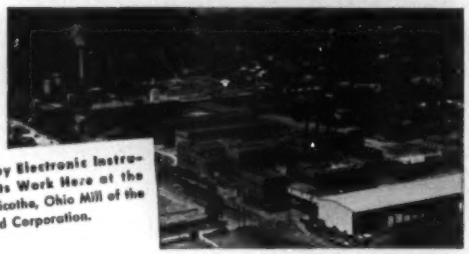

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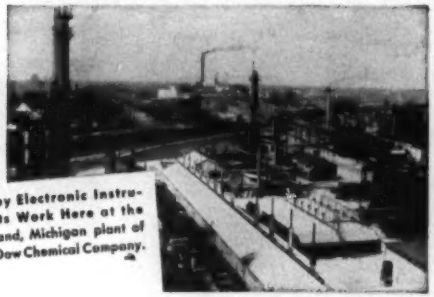

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TABLE II

COMPARISON OF ELECTROLYTE SENSITIVITIES OF WATER-WASHED AND HEXAMETAPHOSPHATE-WASHED PULPS

(Unbleached eucalypt kraft pulp beaten for 4,500 rev. in the Lampen mill, after washing)

Washing medium	Processing * medium	Reference to data	Bursting strength, %	Tensile strength, %	Air resistance, %	Freeness C.s.f., %
B	C	Table 1, this paper	+ 9	+ 7	—11	+33
A	C	Figure 1, this paper	+ 8	+ 6	—24	+44
A	C	Table 3, earlier paper (1)	+ 8	+ 3(n.s.)	—14	+35
B	D	Table 1, this paper	— 9	— 8	—48	+52
A	D	Table 4, earlier paper (1)	— 5	— 3(n.s.)	—46	+52
B	E	Table 1, this paper	—32	—23	—69	+66
A	E	Table 5, earlier paper (1)	—31	—26	—71	+69
B	B	Table 1, this paper	+18	+12	+49	+12
A	B	Figure 2, this paper	+20	+13	+73	+14

Values shown represent percentage increase or decrease in the numerical value of a property caused by the presence of electrolyte in the process water.

* Used for soaking, disintegration, beating, and dilution for freeness tests and sheet sampling, but not for sheet-making; soft town water was used for the latter.

A—distilled water; B—0.001 *N* sodium hexametaphosphate; C—0.008 *N* sodium chloride; D—0.008 *N* magnesium chloride; E—0.008 *N* cerous chloride. n.s.—not significant.

ing strength, 6 percent higher tensile strength, 7 percent higher tearing resistance, and 21 percent higher air resistance than has the water-washed pulp. In addition its freeness is 7 percent lower than that of the water-washed pulp: an indication of the absence from the process water of electrolytes which would tend to increase freeness. Consequently it may be said that the pretreatment of pulp with sodium hexametaphosphate favorably influences the pulp's subsequent response to beating.

In spite of this significant change in its properties, the pulp still retains its sensitivity to cations and also to sodium hexametaphosphate, as is demonstrated by *Table II*.

In this Table an arbitrary method is used to compare the sensitivity of the hexametaphosphate-washed eucalypt kraft with those of water-washed eucalypt kraft used in the present investigation of anion effects, and of the water-washed eucalypt kraft used in the earlier study of cation effects *(1)*. The percentage increase or decrease brought about in the numerical value of each of the various properties by the presence of a particular electrolyte in the process water, has been employed as an indication of the sensitivity of the pulp to that electrolyte. These data demonstrate that the hexametaphosphate-washed pulp has retained its sensitivity to the presence in the process water of sodium and cerous chlorides and of sodium hexametaphosphate, and hence that its surface active properties have not been modified. On the other hand its sensitivity to magnesium chloride has increased to the extent of being highly significant with respect to strength properties, a characteristic only previously revealed by acid-washed pulps but not by water-washed pulps. Thus cation effects on hexametaphosphate-washed pulp can now be correlated more directly with valence, whereas those previously observed on a water-washed pulp could not *(1)*.

The effects just discussed are not necessarily peculiar to eucalypt pulps, as is demonstrated by data obtained with a similarly treated spruce sulphite pulp ('K crown B') and set out in *Table III*.

In this Table are included values for two additional properties, namely folding endurance and water retention *(8)*. In this case, pretreatment with sodium hexametaphosphate also enhanced the sulphite pulp's response to beating, but at the same time eliminated its sensitivity to sodium chloride (compare evaluations in distilled water and in 0.008 *N* sodium chloride, *Table III*). Hence whatever action has taken place during this pretreatment is apparently more complete in the sulphite pulp than it was in the eucalypt kraft. The sulphite pulp still retains its sensitivity to magnesium and cerous chlorides and to sodium hexametaphosphate.

Carboxyl groups and cation exchange.— A highly significant clue to the function of sodium hexametaphosphate in the above-mentioned pretreatment is given by the remarkable agreement between the strength properties of water-washed pulp evaluated in distilled water and those of the hexametaphosphate-washed pulp evaluated in the presence of magnesium chloride (see *Tables I* and *III*). This is shown by the bursting and tensile strengths of the eucalypt kraft and spruce sulphite pulp and also by the folding endurance, tearing resistance and water retention of the spruce sulphite pulp. On the other hand the air resistance and freeness values differ significantly probably because these properties are more sensitive to the presence of magnesium ion in process water than are the strength properties and water retention. These results suggest that the strength properties of a water-washed pulp are insensitive to bivalent cations simply because the pulp contains them to the limit of its capacity to combine or react with them.

It has been realized that water-washed pulps retain a significant amount of water-insoluble inorganic material which, in the case of eucalypt sulphate and soda pulps, remains fairly constant at 0.6 to 0.7 percent, estimated as ash *(1)*. Most but not all of this material is acid-soluble; the ash-contents of acid-washed eucalypt pulps are only in the order of 0.1 percent. Acid washing has been shown to render eucalypt kraft pulps significantly sensitive to bivalent cations (see *Table I*, reference *(1)*). In addition, acid washing of pulps appreciably modifies their characteristics, so that the pulps are less responsive to beating. For this reason it is considered that at least some of the inorganic material is calcium and magnesium combined wtih the carboxyl groups in the pulp, although it is possible that some may also occur as free deposits of water-insoluble compounds, such as calcium carbonate. Acid washing suppresses the ionization of the carboxyl groups, liberating calcium and magnesium in the form of salts, and dissolves the free deposits, in both cases to an extent which is determined by their accessibility in the pulp. Acid-washed pulps thus contain free carboxyl groups which can recombine with uni- and bi-valent cations, for which reason such pulps are sensitive to these cations. In addition, the free carboxyl groups would make the pulps somewhat less hydrophilic and consequently they would not imbibe water so readily

TABLE III

INFLUENCE OF HEXAMETAPHOSPHATE-WASHING ON A LONG-FIBRED SULPHITE PULP

(Unbleached spruce sulphite pulp ("K crown B") beaten for 6,363 rev. in the Lampen mill, after washing)

Washing medium	Processing * medium	Bulk	Burst factor	Breaking length, km.	Tear factor	Air resistance, sec.	Folding endurance, (M.I.T.)	Freeness C.s.f., ml.	Water retention, %
A	A	1.30	71.4	9.23	83	557	1117	356	257
B	A	1.29	76.3	10.01	79	1289	1427	307	294
B	B	1.27	82.2	10.54	80	3168	1799	361	319
B	C	1.28	77.2	9.93	83	932	1402	398	275
B	D	1.29	71.6	9.10	83	456	1187	413	251
B	E	1.31	62.4	8.44	85	198	756	436	233
Differ. significant at									
5% level		*0.014*	*4.0*	*0.33*	*3.2*	*n.d.*	*240*	*19*	*8*
1% level		*0.020*	*5.4*	*0.52*	*4.3*	*n.d.*	*330*	*26*	*10*

* Used for soaking, disintegration, beating, and dilution for freeness tests and sheet sampling, but not for sheet-making; soft town water was used for the latter.

A—distilled water; B—0.001 *N* sodium hexametaphosphate; C—0.008 *N* sodium chloride; D—0.008 *N* magnesium chloride; E—0.004 *N* cerous chloride. Each value is the mean of five replications.

n.d.—not determined.

during beating; this could account for the modified characteristics of acid-washed pulps.

Because sodium hexametaphosphate has the property of sequestrating calcium and magnesium to form soluble complexes, it is probable that when a pulp is washed with this reagent, the calcium and magnesium, which are normally combined with carboxyl groups in the pulp, are replaced by sodium. Under these circumstances the hydrophilic properties of the pulp would be enhanced and the pulp would therefore show a greater response to beating. This could account for the greater strength properties and higher water retention of hexametaphosphate-washed pulps. When these pulps are processed in water containing calcium or magnesium ion, the cation exchange might take place in the reverse direction with the bivalent cations replacing sodium in the pulp, which would then display the beating characteristics of a water-washed pulp. This could account for the identical strength properties of a water-washed pulp evaluated in distilled water and a hexametaphosphate-washed pulp evaluated in the presence of magnesium chloride.

This question of cation exchange through sequestration of bivalent cations is now being investigated by detailed analyses of the ashes of pulps which have received different treatments. Preliminary results on a water-washed eucalypt kraft pulp have indicated that whereas the ash content (0.64 percent) of the pulp is scarcely altered by hexametaphosphate washing (0.68 percent), at least 70 percent of its calcium and magnesium content is replaced by sodium.

Because the washing of the pulp with sodium hexametaphosphate was not exhaustive, the cation exchange could continue during beating as this renders more of the amorphous zones in each fibre accessible to the action of the sodium hexametaphosphate so that eventually all the calcium and magnesium would be completely replaced by sodium.

Conclusions

In general the influence of an electrolyte on pulp and paper properties is determined by the valence and concentration of the cation, but not by the anion unless the latter has a definite pH effect or has extraordinary properties. Hexametaphosphate ion has these extraordinary properties.

The influence of sodium hexametaphosphate can be interpreted in terms of its known effects on colloid systems, viz., its dispersive action, and its ability to sequestrate multivalent cations and so to render them inactive. Its dispersive action leads to greater homogeneity in sheet formation and thus enhances strength properties and air resistance. Its ability to sequestrate calcium and magnesium promotes cation exchange on carboxyl groups with the substitution of sodium for the bivalent cations. Carboxyl groups which are relatively inactive in a water-washed pulp are thus made active; the pulp swells and imbibes water more readily and is therefore more responsive to beating.

Water-washed pulps are insensitive to bivalent cations simply because they already retain these in combination with carboxyl groups.

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Infra-Red Heating and Drying*

Geoffrey Broughton

Paper Engineering Dept., Lowell Textile Institute, Lowell, Mass.

The Paper Engineering Department at Lowell Textile Institute is still new but we have commenced some investigational work in a field which is important to both the paper and textile industries — the application of infra-red heat to resin curing and drying.

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Conduction and convection follow well-known laws, the common characteristic of which is that the heat transfer is proportional to the temperature gradient between the cold and hot bodies.

$$dq/d\theta = \frac{KA\,(T_1 - T_2)}{L}$$

where $\frac{dq}{d\theta}$ is the rate of heat transfer, A the area through which heat transfer takes place, T_1–T_2/L the temperature gradient and K a constant.

For transfer by conduction and convection, contact between the hot and cold materials is necessary; and, in heat transfer by convection, its rate will depend upon their relative motion. Thus, drying of paper is greatly accelerated by high air velocities, even though the temperature gradient remains constant because the coefficient K of the equation increases approximately as the eight-tenths power of air velocity.

In considering infra-red heating and drying, several principles must be studied and clearly understood. Every material emits infra-red radiation, generally considered to be that portion of the electromagnetic spectrum lying above the visible red, i.e., above 0.7μ wave-length. The amount and quality

*Paper presented before the Spring Meeting of the Southeastern Division of The American Pulp and Paper Mill Superintendents Assn., Jefferson Hotel, Richmond, Va.

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Carbose* I, recently developed by Wyandotte, is a technical grade of Sodium CMC manufactured under controlled conditions for consistent uniformity. Closely related to cellulose in chemical nature, Carbose I has been found highly effective in papermaking applications. Tests and reports from users reveal that it does an excellent job in both surface and beater applications.

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DEVELOPMENT DEPARTMENT, PT-7

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(or wave-length distribution) of the emitted infra-red radiation is a function only of the absolute temperature of the material and its surface emissivity. Thus, the heat emitted is:

$$dq/d\theta = A\ T^4$$

where T is the absolute temperature and A is a constant proportional to the emissivity of the surface. Consideration of this equation indicates that the heat emitted from a radiator or source rises very rapidly with its temperature. A source at 2000°F. emits about seven and one-half times as much radiant energy as one at 1000°F. For this reason, in equipment at very high temperatures, e.g., a black ash furnace, most heat transfer is by radiation rather than by conduction and convection.

The wave-length distribution of the infra-red radiation from a source also depends only upon the source temperature. The higher the temperature, the shorter the average wave-length of the emitted radiant heat.

Any study of radiant heat must consider not only the emitter but the receiver of the radiant heat. Just as visible light can be reflected, transmitted, or absorbed when it strikes a material, dependent upon its optical properties, so can infra-red rays be reflected, transmitted, or absorbed. Only in the last case does the radiation heat up the material, or from the usual engineering viewpoint, perform a useful function.

Different materials have different absorption characteristics for the various infra-red wave-lengths or have different infra-red spectophotometric curves. This fact is now the basis of a new analytical chemistry technique, which is growing in importance every day.

A high temperature infra-red source with ninety percent of its emission in wave-lengths below 6μ would not heat up a sheet of nylon as rapidly as a source of equal intensity but with seventy percent of its infra-red emission in wave-lengths above 6μ. In practice, low temperature radiation sources are found to be excellent for the heat setting of nylon, a textile operation which requires very close temperature control of the web.

The ordinary sheet of paper appears to absorb well almost throughout the infra-red spectrum; although cellophane has regions of poor absorption, the marked absorption bands occurring at 4 – 6, 8.5 – 10, and 12 – 20μ. Cellulose acetate has its most important absorption region from 7.5 to 9.5μ, while gelatin has absorption bands at 2.9 – 3.8μ, and from 6 to 8μ.

Reflectivity can become important, particularly if plate-like materials, e.g., flake aluminum are incorporated in the resin film. Thus, in the case of a polystyrene varnish, investigated at Lowell, transmission was cut down almost to zero by addition of 5 percent aluminum flakes, presumably due to reflection of the incident infra-red radiation.

The water infra-red absorption spectrum is of particular interest to us because of possible application in drying. This strong absorption at wave-lengths greater than 1.4μ indicates that low temperature sources may again allow more efficient energy utilization.

With these principles in mind, we might next turn to the experimental work to be reported on today. An experimental curing oven and drier is now in operation at the Institute. The specimen under investigation is placed between two glass mat heaters, which can be maintained at any desired temperature from 200 – 700°F. These heaters consist of electrically heated nichrome wires threaded back and forth across the heater and insulated by glass fabric tubing. The back of the heater is insulated with glass wool batting 2½ in. thick; the front is covered with glass cloth. If it is desired to check change in weight, the specimen can be suspended from a balance arm of a rapid weighing balance. The glass mat heaters can be operated without air or by means of small blowers attached to the back of each unit; and air velocities of up to 50 ft./min., perpendicular to the mat surface are obtainable. Similar air velocities parallel to the mat surface could be secured through a plywood duct with stilling section. Power input to the glass mat heaters was measured with a watt-hour meter. Temperature of the specimen could be measured in the usual way by insertion of a sensitive thermo-couple.

First work was directed towards investigating the heating rates of steel and cork blocks, typical good and poor thermal conductors. Here, there is no question of specific absorption bands; and the results were in agreement with those previously found by Garber and Tiller.

Attention was next turned to the drying of pulp, paper and textile samples. It was easy to demonstrate that they gave typical drying curves, showing constant and falling rate periods. Furthermore, the constant drying rate, found to be almost the same for all materials at a given mat temperature and air velocity, increased rapidly with glass mat temperature.

The materials dried were diverse — asbestos paper, unbleached cotton print cloth, sulfite pulp, blotting paper, loose and hard woolen felts. All gave the same constant drying rates under similar temperature and air conditions. Black sulfite pulp had the same drying rate as the uncolored pulp.

Air, by cutting down the resistance of the stagnant air film, accelerates drying but leads to increased power consumption due to the fact that it is heated as it passes through the glass mat heater.

When the mat surfaces are at a high temperature, heat transfer by convection is relatively unimportant. The drying rate for a mat temperature of 250°F. was increased 2.3 fold, whereas for a mat temperature of 700°F., the increase was only 1.3 fold for a rise of air velocity from 0 to 27.5 ft./min. through the mat.

The data suggest that for a continuous web drier, there is an optimum air velocity at any temperature where savings in capital cost due to decreased drier length balance an increase in fixed charges due to higher power requirements for heating the air. This air velocity will be lower the higher the drier temperature; and, at mat temperatures of 700°F. is almost zero, indicating no advantage in forcing high air velocities through the heater. At 250°F., it is of the order of 20 ft./min.

Mat spacing was also investigated, it being found that moderate increase in spacing has but little effect.

To conclude, it is believed that in the installation of infra-red curing or drying equipment, considerable thought should be given to the infra-red absorption characteristics of the material to be treated and to the characteristics of the infra-red heater as well as to such factors as uniformity of heat across the web, maintenance, etc. While heaters operating at high temperature may have high radiant energy emissions per unit area, their efficiency may be lowered because of their emission of low wave-length radiation. Only careful consideration of the factors involved will allow prediction of the most efficient source of infra-red radiation in terms of space and electrical or other form of power used.

Our thanks are due to Industrial Radiant Heat Corp. for making this work possible.

CANADA'S EXPORTS

OTTAWA — Exports of woodpulp from Canada advanced sharply during May this year to $31,532,000 as compared with only $16,744,000 in same month a year ago and newsprint increased to $47,211,000 as against $44,245,000 last year, with shipments out of the country of other paper rising to $3,202,000 as against $1,158,000 a year ago.

Exports so far this year which are running far ahead of last year. Shipments of woodpulp rose to $130,930,000 in first five months of this year as compared with $73,864,000 a year ago, newsprint reached $209,289,000 as against $194,060,000, and other paper increased to $14,368,000 as against $6,143,000 a year ago.

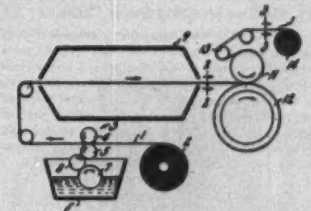
CANADA'S PAPER IMPORTS

Imports of paper into Canada advanced sharply in April this year to $3,024,000 as against $1,778,000 in the same month a year ago and reached a cumulative total of $11,589,000 in the first four months of this year as compared with only $6,958,000 in the corresponding period of last year.

Patent Abstracts

● *In addition to abstracts on the technology of pulp, paper and related industries, miscellaneous abstracts which may provide useful information are included.*

U.S. 2,554,663—Method of Glossing Paper. William W. Cowgill, Fairfield, Conn., assignor to United States Rubber Company, New York, N. Y. Filed December 15, 1949 — Issued May 29.



A continuous process of glossing paper which comprises applying a coating of an aqueous dispersion of a resinous polymeric material selected from the group consisting of polystyrene, polyethylene, polyvinyl chloride, copolymers of vinyl chloride and vinyl acetate, polymerized methyl methacrylate, resinous copolymers of from 80 to 97 per cent by weight of styrene and correspondingly from 20 to 3 per cent of butadiene, resinous copolymers of from 65 to 80 per cent by weight of styrene and correspondingly from 35 to 20 per cent of acrylonitrile, and copolymers of from 65 to 80 per cent by weight of acrylonitrile and correspondingly from 35 to 20 per cent of isobutylene, said resinous polymeric material having a second order transition temperature (T_2) between 55° C. and 125° C., on the surface of the paper, drying and heating the coating at a temperature which is from 20° C. to 60° C. higher than said T_2 temperature and thereby removing the water from the coating and causing the polymeric material to adhere to the surface of the paper in the form of small particles constituting a discontinuous film in preparation for the subsequent glossing step, continuously feeding the resulting coated paper into the nip of a continuously rotating, heated, hard, non-resilient, mirror-finished, glossing roll and a cooperating continuously rotating resiliently surfaced roll rotating at a speed identical with the first-named roll, with the polymer-coated side of the paper web in contact with the mirror-finished roll, passing the paper web around the mirror-finished roll in intimate contact therewith for a substantial angular distance, heating the coating to a glossing temperature of from T_2+40° C.—0.4° C. (P) to T_2+80° C.—0.4° C. (P) where P is the percentage by weight of plasticizer employed in conjunction with said resinous polymerizer while said coating is in contact with said mirror-finished roll and by means of the heat and pressure exerted causing the coating to flow into a thin, highly glossed, tenaciously adherent, continuous film on the surface of the paper web, continuously stripping the hot paper web from the heated mirror-finished roll by withdrawing it tangentially therefrom, and continuously passing the stripped web immediately after stripping for a substantial distance in a straight line, while maintaining the hot coated surface out of contact with any solid surface, until the coating cools to such an extent that its gloss is not injured by bending.

U.S. 2,554,814—Filter Materials and Process for Making Such Materials. John B. Catlin, Neenah, and John C. Wollwage, Appleton, Wis., assignors to Paper Patents Company, Neenah, Wis. Filed May 21, 1945—Issued May 29, 1951.

The method of manufacturing a filter product of the class described, which consists in the steps of first superposing, without substantial compression, a plurality of sheets of thin, creped, cellulosic tissue whereby said sheets contact each other almost exclusively in the regions where the peaks of the crepes in adjacent plies come together, distributing throughout said superposed tissue sheets a liquid, resinous bonding material, said distribution being effected under conditions which maintain the normal creping and spacing of said sheets existing prior to the resin distributing operation, which distribute the bonding material throughout said sheets, and which cause the formation of a very large number of small-dimensioned, spaced-apart menisci of the resin bonding material between and connecting adjacent sheets in the regions where the peaks of the crepes in such sheets come together, the interstices between the constituent fibers of said plies and between said plies being maintained substantially free of resin except for said connections, and finally heating said resin-containing sheets to dry said product and to cause said resinous bonding material to join together the individual fibers constituting said sheets and said sheets, said final heating operation also being carried out without substantial reduction in the bulk or substantial increase in the unit density of said superposed sheets.

U.S. 2,554,899—Grease-Proof Paper and Process of Making the Same. William W. Cowgill, Fairfield, Conn., assignor to United States Rubber Company, New York, N. Y. Filed December 20, 1949—Issued May 29, 1951.

A process of making grease-proof paper which comprises applying directly to the surface of paper in sheet form a coating of an aqueous dispersion of a resinous copolymer of styrene and butadiene in proportions ranging from 80 to 90% of styrene and correspondingly from 20 to 10% of butadiene and a rubbery copolymer of butadiene and styrene in proportions ranging from 50 to 80% of butadiene and correspondingly from 50 to 20% of styrene, said copolymers being employed in relative proportions of from 30 to 80% of said resinous copolymer and correspondingly from 70 to 20% of said rubbery copolymer, drying said coating, subsequently applying over the dried coating of an aqueous dispersion of a resinous copolymer of styrene and acrylonitrile in proportions ranging from 65 to 80% of styrene and correspondingly from 35 to 20% of acrylonitrile and a rubbery copolymer of butadiene and acrylonitrile in proportions ranging from 55 to 80% of butadiene and correspondingly from 45 to 20% of acrylonitrile, said last-named resinous and rubbery copolymers being employed in relative proportions of from 45 to 70% of said last-named resinous copolymer and correspondingly from 55 to 30% of said last-named rubbery copolymer, and drying said last-named coating.

U.S. 2,554,989 — Pulpwood Chain Sawing Machine. Alfred J. Johnson, Ranier, and Foster D. McCormack, International Falls, Minn. Filed April 24, 1948—Issued May 29, 1951.

A sawing device for dividing substantially tree-length logs into pre-determined lengths comprising an elongated frame member, a longitudinally extending shaft pivotally mounted on the frame, a series of sawing means on the frame, a series of pairs of arms mounted on the shaft for forcing logs against said sawing means, arc-shaped members positioned between each of the pair of arms, said arc-shaped members mounted on the frame adjacent the shaft and curving upwardly from said shaft for supporting logs being sawed, the said sawing means positioned between the arc-shaped members, and means on the frame and positioned below the sawing means for receiving portions of the logs divided by the sawing means.

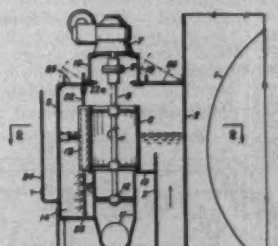
U.S. 2,555,031—Container. Mary C. Fox and Charles C. Howes, Baltimore, Md., assignors to The Davison Chemical Corporation, Baltimore, Md. Filed July 10, 1946—Issued May 29, 1951.

A container for the storage and shipping of phosphatic fertilizers characterized by the presence or evolution of materials destructive to paper, said container comprising a multi-layered bag of kraft paper or the like, a strongly adherent coating of a homogeneous mixture of lime and starch on the inner surface of the innermost layer of the multi-layered bag, said starch bonding the coating to the paper and extending through the lime and forming a strong coating providing a continuous protective layer adapted to intercept and neutralize materials destructive to the paper prior to contact with the paper.

U.S. 2,555,057—Process for the Production of Paper Coating Adhesives. Laurence W. Porter, Westbrook, and Frank H. Jewett, II, Buxton, Maine, assignors to S. D. Warren Company, Boston, Mass. Filed December 10, 1947—Issued May 29, 1951.

Process for the production of a paper coating composition which comprises heating a mixture of an amylaceous material and a water-soluble, acid-curing aminoresin formed by reacting an aldehyde with a compound containing more than one amino group, in an aqueous medium maintained at a pH value of from 7 to 8 at an elevated temperature until the mixture attains substantially its minimum viscosity and quickly checking the reaction at this point by vigorously agitating the mixture with the addition of water and finely divided calcium carbonate pigment.

U.S. 2,555,087 — Concentrating System for Black Liquor Treating Combination. Frank W. Hochmuth, Brooklyn, N. Y., assignor to Combustion Engineering-Superheater, Inc. Filed October 15, 1947—Issued May 29, 1951.



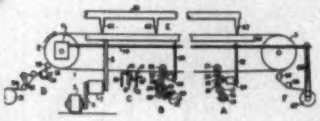
In combination, an evaporator for concentrating waste liquor from pulp mills, an overflow box connected to receive the concentrated liquor from the evaporator, a cylindrical screen disposed in said overflow box for at least partial submergence in said concentrated liquor with the screen axis

substantially vertical, means forming an outlet in the lower portion of the overflow box communicating at the screen bottom with the hollow interior of the screen cylinder and arranged so that liquor leaving the box must pass into that outlet through the perforate wall of said cylinder, a substantially vertical shaft extending axially through the cylindrical screen and supporting same thereon for rotation therewith, bearings for said shaft, motor means for rotating the shaft and said screen in those bearings, a scraper for said rotatable screen also disposed in generally vertical position along one side of the screen cylinder in said overflow box, mounting means for said scraper and cooperating yieldable means urging the scraper against the outside of said cylindrical screen whereby liquor lumps deposited thereon by passage of the liquor inwardly through the screen perforations are removed therefrom by the screen rotation, means forming beneath said scraper and the portion of the screen that is contacted thereby a lump chamber which communicates with said overflow box and is filled with liquor therefrom and downwardly into which said removed liquor lumps drop from the scraper, means forming within said scraper adjacent its aforesaid contact with the screen an interior space that is adapted to receive a heating medium, and means for supplying said interior space with steam which raises the temperature of said scraper to above the melting point of the said liquor lumps and thereby facilitates the scraper's aforesaid transfer of those lumps from the rotating screen into said lump chamber therebeneath.

U.S. 2,555,162 — Web Winding and Unwinding Control. William T. Stanford, Salem, Ill. Filed July 18, 1949—Issued May 29, 1951.

In a machine of the type described having a roller for carrying a web in rolled form, a first shaft secured to said roller, a first gear rotatable with said shaft, a second gear in meshed relatipn with said second gear and rotatable relative thereto, bearings rotatably supporting said second shaft, said second shaft being also axially displaceable relative to said bearings, a friction plate secured to said second shaft on one side of the second gear, another friction plate keyed to said second shaft on the other side of said second gear adjacent one of said bearings so as to be rotatable with and axially slidable on said shaft and means for shifting said second gear axially in response to changes in tension in unrolled portions of said web, whereby changes in tension shift the second shaft and thereby cause the friction plate thereon to engage the gear and shift the latter into contact with the second friction plate.

U.S. 2,555,266 — Method of Printing and Coating Paper. Donald B. Bradner, Mount Healthy, Ohio, assignor to The Champion Paper and Fibre Company, Hamilton, Ohio. Filed July 10, 1945—Issued May 29, 1951.



A process of the class described which comprises applying a substantially continuous layer of film-forming coating composition to a casting surface, printing an ink upon said layer, subjecting the ink and coating to a chemical treatment to prevent subsequent dispersion thereof on contact with water, cementing paper to the printed film layer and detaching the paper carrying the printed film layer from the casting surface after the film layer has assumed a cast condition.

Can. 473,838—Coating Compositions. Karl W. Fries, Rhinelander, Wisconsin, U.S.A., assignor to Rhinelander Paper Company, Rhinelander, Wisconsin, U.S.A. Filed November 19, 1945—Issued May 22, 1951.

A coating composition comprising in solution in an organic solvent a mixture of from 1% to 10% of a polymerized beta-pinene resin having a melting point of around 115° C., from 1% to 10% wax, the balance consisting of a plasticized ethylene diamine polyamide of dimerized and trimerized linoleic and linolenic acids.

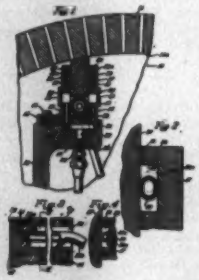
A lacquer composition adapted for use as a moisture proofing coating comprising in solution in an organic solvent a mixture of from 1% to 10% polymerized beta-pinene resin having a melting point around 115° C., from 1% to 10% wax, the balance consisting of a plasticized ethylene diamine polyamide of dimerized and trimerized linoleic and linolenic acids, said lacquer composition containing between 25 and 30% solids.

A lacquer composition adapted for use as a moisture proofing coating composition comprising in solution in an organic solvent a mixture of from 1% to 10% of a polymerized beta-pinene resin having a melting point of around 115° C., from 1% to 10% wax, the balance consisting of a plasticized ethylene diamine polyamide of dimerized and trimerized linoleic and linolenic acids, said polyamide being plasticized by the addition of 5% to 10% by weight of said polyamide of a plasticizing material, said lacquer composition containing between 25% and 30% solids.

Can. 473,842—Taping Machine Tape Supply Controls. Albert F. Shields, Forest Hills, Long Island, New York, U.S.A., assignor to S & S Corrugated Paper Machinery Co., Inc., Brooklyn, New York, U.S.A. Filed November 15, 1949—Issued May 22, 1951.

A web feeder comprising means for mounting a supply roll; means for drawing web from the supply roll and means for feeding the web to maintain a slack loop between the supply roll and the means for drawing the web therefrom.

Can. 473,975—Suction Roll Seal Assemblies. Lloyd Hornbostel, Beloit, Wisconsin, U.S.A., assignor to Beloit Iron Works, Beloit, Wisconsin, U.S.A. Filed June 20, 1949—Issued May 29, 1951.



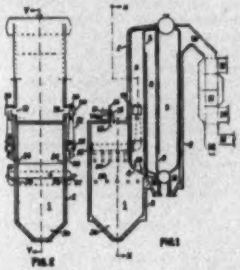
A seal for a suction roll including a rotatable, perforated suction shell, a fixed suction gland extending axially of said shell and a sealing strip extending from said gland into contact with the inner periphery of said shell, comprising a hollow tube confined between said gland and said sealing strip in resilient sealing engagement therewith, said tube being in rolling engagement with said sealing strip and said gland to accommodate relative movement therebetween.

In a suction drum for a paper making machine having a rotatable, radially perforated cylindrical shell, a suction gland extending longitudinally of said shell parallel to the axis thereof, and an outwardly directed rib carried by said gland to extend into closely spaced relation to the inner periphery of said shell and having a central recess formed therein opening toward said shell, sealing means extending from said rib into engagement with said shell comprising a sealing strip mounted in said rib recess and movable relative to said rib, means urging said strip into resilient sealing engagement with said shell, and a resilient sealing tube coextensive with said sealing strip and confined between said strip and said rib for rolling engagement with said strip and said rib.

Can. 474,104 — Live Jump Rolls. Hiram O. Beeching, South Bend, Washington, U.S.A. Filed September 25, 1948—Issued June 5, 1951.

A live jump roll comprising a portable frame, spaced tubular standards on said frame, posts vertically slidable in said standards, a chassis carried by said posts, bearings mounted on said posts, a roll mounted in said bearings, a motor mounted on said chassis for driving said roll, a pair of levers mounted on said frame for raising and lowering said posts, and a power cylinder mounted on said frame for operating said levers.

Can. 474,142—Apparatus for Recovering Chemicals from Liquor Produced by Pulping of Cellulosic Materials. Herman N. Simpson, Seattle, Washington, U.S.A. Filed June 3, 1947—Issued June 5, 1951.



The method of recovering chemicals from black liquor that is produced in the pulping of cellulosic materials by the calcium base sulphite process, comprising flowing the dispersed black liquor and air through an introductory furnace zone maintained at such temperature that water is evaporated from the liquor and ignition of the organic matter and reaction of the calcium compounds is effected, continuing the flow into a second zone maintained at a higher temperature of reaction such that the reaction between calcium sulphide and sulphur dioxide is effected to produce calcium oxide and other products, and inducing a draft from the first into the said second zone by withdrawing gases from the latter at a point below the first zone.

The method of recovering chemicals from black liquor that is produced in the pulping of cellulosic materials by the calcium base sulphite pulp process which comprises creating in a furnace, an upper treating zone of a temperature between 500°C. and 850°C. and a lower zone in direct communication therewith of from 850°C. to 1500°C. discharging the black liquor in an atomized condition along with air to support combustion, downwardly into the upper zone to cause evaporation of the water therein, the ignition of the organic and lignin matter and the reaction of the calcium-igno-sulphonates and carbon to produce, along with other products, calcium sulphide and sulphur dioxide, and introducing sulphur dioxide gas into the lower zone in an amount required to complete reaction therein of the calcium sulphide, to calcium oxide and other products, and the introduction of air sufficient to burn any residual sulphur to sulphur dioxide.

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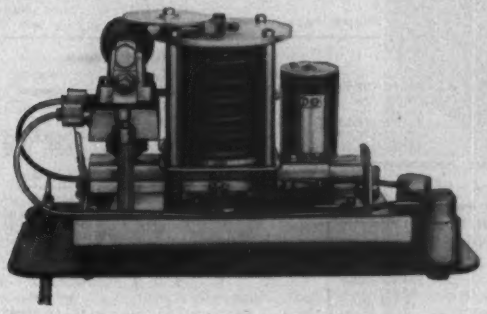

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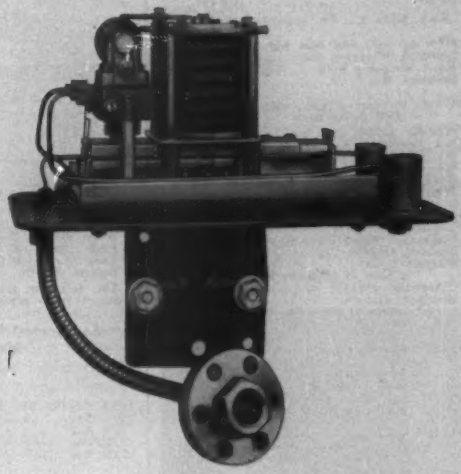

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Paper Towels—per case of 3750
Wh. Jr. M'fil'd 9½x9½ $5.75
Br. Jr. M'fil'd 9½x12 ..... 4.10
Br. Jr. M'fil'd 9½x9½ 3.60
Br. Jr. Sgl. fold 9½x10½ 3.65
Bldd. 7½x11, 24/25 rolls $7.00/7.55

Manila, per cwt.
No. 1 Jute Tag, 100-lb., sheets* $19.55/21.55
Reg. Jute M.F. 40-lb., sheets* 18.00/20.00
Wrapping Manila 8.75/10.50
Printing Manila 10.50/12.00
* Less usual allowance for rolls.

Gummed Tape—per bdl., 500 bdls. or more
90-lb. 375 ft. GSI ..... $7.20 / —
60-lb. 600 ft. GSI ..... 7.20 / —
35-lb. 800 ft. GSI ..... 8.28 / —
35-lb. 500 ft. GSO ..... 6.21 / —

MARKET WOOD PULP

Third Quarter Contract Prices, Per Short Air-Dry Ton

	Varying freight allowances		On Dock Atlantic Ports		
	*U. S.	Canadian	*Swedish	*Finnish	*Norwegian
Groundwood	$92.50/ —	‡95.00/100.00			
Sulfate, Bleached	145.00/ —	190.00/200.00	$230.00/ —	$230.00/ —	$230.00/ —
Semi-bleached Sulfate	140.00/ —				
Sulfate, Unbl.	132.50/ —	145.00/175.00	200.00/ —	200.00/ —	
Sulfite, Bldd.	140.00/ —	160.00/175.00	225.00/ —	225.00/ —	225.00/ —
Sulfite, Unbldd.	132.50/ —	150.00/160.00	200.00/ —	200.00/ —	
Sulfite, Unbl'd (Glassine)		164.00/ —			
Soda, Bldd.	140.00/ —	155.00/160.00			
Sulfite Screenings	72.50/ —				
Sulfate Screenings	67.50/ —				
Groundwod Screenings	60.00/ —				
Unbldd Sulfate Sideruns	132.50/ —				
Stand. News. Sideruns	92.50/ —	106.00 —			

* OPS Ceiling, CPR 49 ‡ F.o.b. Shipping Point.

Boards, per ton—

Filled News	$107.50/ —
Plain Chip	105.00/107.50
Bldd. Mix. L-d. Chip	147.50/ —
White Pat. coated .020	170.00/ —
Kraft Liners 42 lb.	115.00/117.50
Kraft Corr. .009	122.50/126.00
Binders Boards	137.50/140.00

The following prices are representative distributors' resale prices:

Rag Content Bonds and Ledgers—
White, 20 lb.

Bonds	4 Cms.
	per cwt.
100% Rag Ex. No. 1	$70.45/$75.90
100% Rag	62.65/ —
75% Rag	48.15/ —
50% Rag	38.90/ —
25% Rag	31.65/ 33.00

Ledgers	4 Cms.
	per cwt
100% Rag Ex. No. 1	$72.65/$72.80
100% Rag	63.90/ —
75% Rag	49.40/ —
50% Rag	40.20/ —
25% Rag	33.00/ 34.30

Sulphite Bonds and Ledgers
White, 20 lb.

Bonds	4 Cms.
	per cwt.
Watermarked	$19.00/$20.50
Plain	18.05/ 19.50

Ledgers	4 Cms.
	per cwt.
Watermarked	$20.30/$21.80
Plain	19.35/ 20.80

White Book

Conversion Coated	Case
	per cwt.
No. 1	$23.40/$24.65
No. 2	21.90/ 23.40
No. 3	20.40/ 22.40
Machine Coated	
No. 1	$18.15/$18.40
No. 2	16.15/ 16.65
Uncoated	
No. 1 Antique (Watermarked)	$18.65/$19.15
Offset	17.40/ 19.90
A Grade E. F.	17.40/ 18.15
A Grade S. C.	18.15/ 18.65
B Grade E. F.	17.65/ —
B Grade S. C.	16.90/ 18.40

‡ Indicates a price change.

WASTE PAPER MARKET

The following quotations were gathered from major dealers in each market. They are an indication of the price range in which volume tonnage was moving on the date specified. Prices to mills, per ton, f.o.b. cars shipping point (includes brokers' fee.)

	New York	Philadelphia	Boston	Chicago
	July 23	July 20	July 20	July 5
No. 1 Mixed Paper	$19.00/ 24.00	$21.00/ 24.00	$19.00/ 21.00	$20.00/ —
Boxboard Cuts	26.00/ 25.00	21.00/ 24.00	26.00/ —	25.00/ —
Mill Wrappers	26.00/ 30.00	25.00/ 30.00	22.00/ 30.00	22.00/ —
No. 1 News	23.00/ 25.00	22.00/ 25.00	— /22.00	23.00/ —
Over-issue News	28.00/ 35.00	30.00/ 35.00	22.00/ 24.00	25.00/ —
Corrugated Containers	58.00/ 64.00	58.00/ 63.00	64.50/ 66.00	52.00/ —
New Corrugated Cuts	Nominal	60.00/ 65.00	55.00/ 65.00	47.00/ —
Double Kraft Ld. Corr. Cuts .*	115.00/120.00	105.00/120.00	130.00/140.00	120.00/ —
100% Kraft Corr. Cuts .*	140.00/165.00	125.00/135.00	130.00/170.00	140.00/ —
Used Kraft Bags .*	85.00/165.00	80.00/ 85.00	85.00/116.50	65.00/ —
No. 1 Brown Kraft Paper	70.00/ 75.00	90.00/ 95.00	90.00/110.00	65.00/ —
Super Resorted Br. Kraft .*	100.00/105.00	100.00/105.00	100.00/125.00	90.00/ —
New Br. Kraft Env. Cuts .*	160.00/180.00	160.00/175.00	160.00/180.00	150.00/ —
New Br. Kraft Cuts .*	150.00/175.00	130.00/140.00	150.00/180.00	140.00/ —
No. 1 Gdwd Shvs.	65.00/ 70.00	50.00/ 65.00	75.00/ 85.00	55.00/ —
White Newsblanks	100.00/110.00	80.00/ 90.00	90.00/100.00	80.00/ —
No. 1 Flyleaf Shvs. .*	80.00/120.00	80.00/ 85.00	95.00/110.00	100.00/ —
No. 1 Soft Wht. Shvs. .*	160.00/190.00	170.00/175.00	175.00/195.00	175.00/ —
Super Soft Wht. Shvs. .*	190.00/200.00	190.00/200.00	190.00/210.00	185.00/ —
Hd. Wht. Shvs. .*	195.00/210.00	190.00/215.00	190.00/215.00	180.00/ —
Hd. Wht. Env. Cuts .*	*200.00/245.00	205.00/225.00	200.00/215.00	190.00/ —
New Manila Env. Cuts .*	140.00/150.00	160.00/165.00	140.00/165.00	115.00/ —
Col. Tab Cards .*	110.00/120.00	115.00/120.00	95.00/150.00	100.00/ —
Manila Tab Cards .*	170.00/185.00	165.00/190.00	160.00/200.00	165.00/ —
No. 1 Mixed Ledger .*	95.00/105.00	100.00/105.00	87.00/110.00	100.00/ —
White Ledger .*	130.00/140.00	125.00/130.00	125.00/140.00	125.00/ —
No. 1 Book & Mag.†	41.00/ 45.00	35.00/ 45.00	40.00/ 60.00	25.00/ —
No. 1 Rep'd. Hvy. Books‡	50.00/ 35.00	50.00/ 65.00	65.00/ 75.00	50.00/ —

* GCPR Ceiling. † Includes Time & Life; no coarse groundwood. ‡ Not to exceed 10% groundwood.

RAG MARKET

New Domestic Cotton Cuttings
OPS Ceiling Price, CPR 28
Delivered Mill Basis

Add 7½% Dealer Commission

No. 1 White Shirts	$21.00
No. 1 Unbldd. Muslins	21.00
Bldd. & Unbldd. Underwears	21.00
Bldd. Canton Flannels	21.00
No. 1 Light Silesias	16.00
No. 1 Light Prints	11.50
No. 1 Blue Overalls	14.50
Suntan Khakis	11.50

Add 10% Dealer Commission

Fancy Shirts	$10.00
Indigo Blues	10.00
Mixed Khakis	8.00
Corduroys	8.00
Cottonades	8.00
No. 1 Washables	6.50

Old Domestic Cotton Rags
(Prices to Dealers, F.o.b. Ship. Pt.)

	Per 100 lbs.
Mixed Whites	$5.00/$5.50
Cotton Pants & Overalls	4.25/ 5.00
Thirds and Blues, Repacked	3.75/ 4.00
No. 1 Roofing Rags	2.00/ 2.10
No. 2 Roofing Rags	1.90/ 2.00
No. 3 & 4 Roofing Rags	1.80/ 1.90

Bagging
(Prices to Dealers, f.o.b. N. Y.)

	Per 100 lbs.
Foreign Gunny	$5.50/$6.00
Domestic Gunny, No. 1	5.50/ 6.00
Heavy Wool Tares	8.00/ 8.25
Foreign Manila Rope	8.50/ 8.75
Domestic Manila Rope	9.00/ 9.25
Jute Strings	6.00/ 6.50
No. 1 Sisal Strings	8.00/ 8.25
Paper Mill Tares	5.25/ 5.75
Foreign Scrap Burlap	5.00/ 5.25
Domestic Scrap Burlap	6.50/ 7.00
Austr. Wool Pouches	7.50/ 8.50
New Burlap Cuttings	7.50/ 8.00

MATERIALS

Aluminum, sulfate:		
comi. bags, wks..... cwt.	1.65	
iron-free c.l.	3.25	
Alcohol, ethyl:		
tax free, dms. c.l.....gal.	1.01	/ 1.05½
dcld. East Miss.		
Alcohol, methyl:		
Synthetic, Zone 1, dms.		
c.l. flt. alld.....gal.	.44	
Casein, acid-prec.:		
dom. sh. pt. c.l.....lb.	.39	/ .41½
imp. ex. dock .....lb.	.29½/	.40
Caustic soda:		
c.l. wks. solid, 76%, cwt.....	3.35	
flak. & grd. 100-lb. drums...	3.75	
liquid 50% tanks....	2.55	
liquid 70% tanks..	2.65	
China clay:		
dom. air-float. filler, c.l. wks. ton	10.00	
water-washed comm. filler....	11.00	
coating	17.50	/30.50
imported, ex whse...short ton	15.20	/28.35
Chlorine:		
single-unit tanks, works..cwt.	2.70	
multi-unit .....cwt.	3.35	/ 4.40
Formaldehyde:		
USP, inh. dms, c.l. wks....lb.	.0625/	.0675
l.c.l., E. wks.....	.0671/	.0725
Fuel oil:		
Bunker C, No. 6 Cal. bvy		
tanks, refinery .....bbl.	1.95	/ 2.15
light .....bbl.	2.00	/ 2.25
Hydrogen peroxide:		
USP, 35% cbys. E. of Miss.		
Lime: lb.	.23½/	.26½
hydrated, bags, wks. .....ton	13.50	
Rosin:		
B gum, drms, c.l. Savan..cwt.	7.00	/ 9.08*
G .....cwt.	8.02	/ 9.49*
H, I, K .....cwt.	8.35	/ 9.49*
FF, wood, do.....cwt.	6.50	/ 7.00
* OPS Ceiling, CPR 32.		
Rosin size:		
70%, gum & pale grds, tank		
cars, south, sh. pt. ....cwt.	6.47	/ 6.65
Salt cake.		
dom. bulk, c.l. wks.....ton	17.00	
wks. frt. all.....ton	20.00	/22.00
Soda ash:		
light, 58%, bags, wks... ...	1.30	
bulk .....cwt.	1.21	
Sodium silicate 40°:		
turbid. c.l. wks. .....cwt.	1.30	/
l.c.l. wks.	1.60	/ 1.85
Sodium peroxide:		
dms. c.l. E. of Miss.....lb.	.21	
l.c.l. do. .....lb.	.21½/	.22
Soybean, protein:		
chem. isol, wks. c.l..... ..lb.	.24	/ —
Cmn. and Chic.		
Sulfuric acid:		
60° Be. cbys. cl. wks.... cwt.	1.75	/ —
l.c.l. wks. .....cwt.	2.05	/ 2.85
Sulfur:		
crude, c.l. mines, contract, long ton	21.00	/22.00
f.o.b vessels Gulf	22.50	/23.50
Sulfur dioxide:		
liquid, comi. cyl. wks.....lb.	.09	
multi-unit cars .....lb.	.0535	
Starches:		
pearl corn, bags, c.l. wks...cwt.	6.02	/ —
white dextrines, c.l. wks...cwt.	7.41	/ —
potato, Idaho, c.l. wks....cwt.	5.50	/ —
potato, Maine, c.l. wks....cwt.	5.75	/ —
tapioca, conv. dextrines...cwt.	7.75	/ 8.50
low, Siam, on dock N. Y.....	5.75	/ 6.00
Talc:		nominal
domestic, 50-lb. sacks, c.l. wks. .....ton	25.00	/30.00
Titanium dioxide:		
anastase, c.l. dcld., bags....lb.	.21	/ .21½
l.c.l. dcld. .....lb.	.22	/ .22½
rutile, c.l. dcld. .....lb.	.23	/ .23½
l.c.l. dcld. .....lb.	.24	/ .24½

NEW EQUIPMENT

Soil Tester

The soil resistivity tester is designed for testing soil resistance, circuit resistance, anode resistance and polarization effects.

Lightweight for tireless carrying with web harness, its power source self-contained, Vibroground comes equipped with a single, specially-designed four-foot probe made of stainless steel. Six foot leads are permanently attached to probe and have spade terminals for convenient attachment to meter.

Straight Tube Cleaner

The new tube cleaner is the only one that immediately removes deposits from completely plugged heat exchanger tubes, according to the manufacturer. Because of its powerful action, the Model TP-301 with its many

improvements does the job in fewer man-hours. Lighter in weight; shorter; and of increased capacity, this positive air-driven, rotary shaft, drill type tool scavenges the tube with air or water while cleaning. Operates on air pressure as low as 50 lbs.

Tilting Motor Base

A new, lightweight Tilting Motor Base, adjustable in width and length

to accommodate all sizes and types of fractional motors up to one hp., is announced. Used with variable speed drives, the unit also acts as a belt tightener and can be used for easy belt changing on Cone Step Pulleys. A handle screw adjustment provides exact speed control and changes while the machine is in use. Correct belt tension and alignment is constantly maintained, according to the manufacturer.

Foldaway Forks

Forks that hinge in a vertical position are part of a hook truck innovation. The foldaway forks can be lowered to handle standard pallets, and the hooks are used to handle new forkless pallets. Thus, old and new pallet systems can be used together.

The system makes it possible to load railroad box cars right up to the door, because no space must be saved for withdrawing the forks.

The forks are hinged so they fold up vertically when not needed. When not in use they are latched in place, and when needed, they can be lowered in a moment.

Direct Fired Heaters

A standard line of direct fired heaters, capacities 100,000 B.t.u. per hour to 15,000,000 B.t.u. per hour is in production. This equipment is designed for a wide range of application, in-

cluding indirect circulating heating using heat transfer mediums, such as Dowtherm, and for direct heating of vapors and liquids. Temperatures range to 750°F. or above.

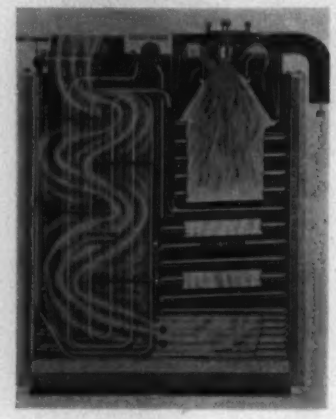
Complete automatic control systems are available, also completely engineered systems including all necessary equipment.

Air Operator Units

An air-operator unit for plug valves in valve-sizes ranging from ½" through 3", is announced. Also is available with positioner. Supplemental equipment includes a simple air-switch, a solenoid operated air switch, and a manual throttling-control station. Minimum air-pressure required for the air-operators is 50 p.s.i. Operators may be installed to either open or close subject valves on air lapse.

Re-circulation Steam Generator

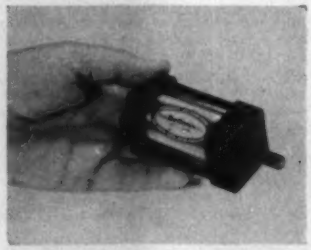
The C-E Re-circulation Steam generator is a complete steam plant which includes feedwater pump and control,



fuel equipment and control, combustion control and safety devices, forced-draft fan, safety valves, circulating pump and all other auxiliaries. The generator may be fired by light or heavy fuel oil or by natural gas. It is available in several sizes for steam capacities from 2800 up to 6000 lb. per hr. and for operating pressures up to 300 p.s.i.g.

Small Air Cylinder

The new unit was developed primarily for use in jig and fixture operations and for parts positioning and ejection. Trade-named the HAN-D-



AIR CYLINDER, it has a power factor of 1:1, developing a thrust approximately equal to the applied air pressure. Compact in design (4½" long by 1½" high by 1½" wide), the cylinder can be mounted in practically any position: front flange, rear flange, side, foot, or front pivot, it is stated. The 5/16" diameter piston rod has ½" of threaded end to simplify installation.

THWING-ALBERT
ELECTRO-HYDRAULIC

TENSILE STRENGTH TESTERS

for

Paper and Allied Industries

Multiple Ranges 0-15-50-150

Accessories for Elongation Recording or Indicating

Sample Sizes 15 mm to 2".
Ideal for Zero Span, Finch Wet Strength and Finch Edge Tear Testing.

Ask for Bulletin P-478.

THWING-ALBERT INSTRUMENT COMPANY
5366 Pulaski Ave.
Philadelphia 44, USA 107

NEW SUPPLIES

Instant Dry Primer

Instant Dry Rust Inhibitor Primer is a fast dry, penetrating metal primer. Assures against peeling, chipping, and rusting, and permits re-coating ordinarily in from 10 to 30 minutes with all standard types of paint, rubber base paints, vinyl coatings and spraying lacquers, the manufacturer claims.

NEW LITERATURE

Yarnall-Waring Co., Mermaid Lane, Philadelphia, Pa. Bulletin, "T-L740." Information about the Yarway Impulse Steam Trap.

Walter Kidde & Co., Inc., 675 Main Street, Belleville, N. J. Booklet, "How to Prepare Your Plant For Atomic Attack." Presents factual information about the atomic bomb, its destructive potential, and its limitations. A guide to plant management in organizing personnel to cope with possible plant disasters.

Industrial Nucleonics Corp., 1205 Chesapeake Avenue, Columbus 12, Ohio. Pamphlet, "Model BG-1 Beta Ray Gauge." Technical and sales copy.

Texas & Pacific Railway Co., Dallas 2, Tex. Booklet, "The Four Pillars of Freedom." How to work, save, vote, pray to make America strong.

Minneapolis-Honeywell Regulator Co., Wayne and Windrim Avenues, Philadelphia 44, Pa. Bulletin, "Instrumentation Data Sheet 10.0-6." Describes the operation and constructional features of the duplex electronik recorder together with numerous applications for which it is adaptable. Also, Specification Sheet, No. 415-1. "Air-Operated Diaphragm Motor Valves." Series 362. Includes pressure drop ratings, dimension drop ratings, dimension drawings, tables and other related information.

Service Industries, 2103-05-07 E. Somerset Street, Philadelphia 34, Pa. Pamphlet, "Ferox, A Chemical Rust Disintegrator." Technical data sheet and trial offer.

Distribution Section, Printing Services Div., Dept. of Commerce, Washington 25, D. C. Booklet, "Pooling Production For Defense." Explains in simple A-B-C fashion the steps a group of businessmen must take to band themselves together into a pooled production unit to handle defense contracts and sub-contracts, and obtain immunity from federal antitrust laws. Explains in detail the various types of production pools it is possible to form; the characteristics of an ideal pool; disadvantages and advantages of pool operations. The attitude of the government toward businesses forming pools to handle defense orders is given; also a short summary of federal laws which restrict the operation.

Office of Technical Services of the U. S. Dept. of Commerce, Washington 25, D. C. "June, 1951, Technical Reports Newsletter." Available gratis.

Snyder Chemical Corp., Bethel, Conn. Bulletin, "Handling of Synco 418."

U. S. Dept of Commerce, National Production Authority, Office of Public Information, Washington 25, D.C. "Allotment Accounting for Consumers Under CMP." Tells general requirements for obtaining a controlled materials plans allotment; receipt of an allotment; code identification; etc.

Armstrong Machine Works, Three Rivers, Mich. Catalog, 12 pp. "Armstrong Steam Traps, Air Traps." Features the manufacturer's "Inverted Bucket Principle." Gives data on calculation of condensate loads and selection of traps to handle these loads, including a full page for the steam trap capacity chart.

Public Relations Committee, Midwest Consumers of Waste Paper, Suite 415, 315 North Seventh Street, St. Louis 1, Mo. Booklet, "What Materials Damage Paperboard, Where to Look For Them, Why They Are Injurious to Equipment." A ready reference for industrial suppliers of waste paper, waste paper dealers, and paperboard mill inspectors.

Australian and New Zealand Notes

The possibility of producing reels of newsprint using pulp from tropical growths was mentioned in a recent interview with Wing-Commander W. T. Curtis-Willson, president of the Newspaper Society of Great Britain, who is at present visiting Australia. He said that with the growth of education throughout the world, the demand for newsprint would go on increasing like a snowball, "and there might be a newsprint famine ten years from now."

"I hope that when I get back to England in August there will be a sample consignment of pulp made from tropical growths that have not hitherto been used in newsprint manufacture," he added. "There is a pilot mill in one of the colonies from which, I hope, this pulp will be delivered, and it will be used, with admixtures of timber, to make newsprint in various grades. Although newspapers have already been produced on trial runs with the use of pulp obtained from other sources than timber, in such trials flatbed machines had been operated, but it is now proposed to put such newsprint into reels, for by mixing timber and other flexible growths it is hoped to produce newsprint equal to that obtained from timber alone.

"In northern Queensland there are grasses, 5 feet to 6 feet high, which could be turned into newsprint, but whether there is a sufficient quantity of them I do not know. Mills for dehydrating the raw materials could be established wherever such materials grow, but the real problem would be where to establish the newsprint mills in strategic positions all around the world."

* * *

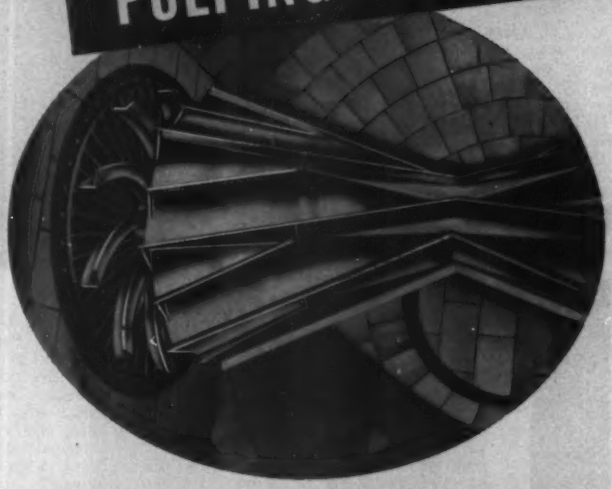
Latest figures from New Zealand show that the production of woodpulp in that country is confined at present to mechanical pulp, all chemical pulp being imported. In 1940 local production totaled 5,881 tons, with imports amounting to 7,090 tons. Consumption in paper and board mills was 12,867 tons. By 1948 local production had been stepped up to 21,077 tons, while imports totaled 13,506 tons. Consumption was 30,324 tons. In 1949 (the latest year for which full figures are available) production was 21,438 tons, while imports totaled 14,523 tons. Consumption was 29,772 tons.

* * *

New Zealand paper manufactures were mainly wrappings made from imported chemical pulp plus locally collected waste paper and flax fiber; and paper board products made largely from imported chemical pulp and waste. Production of wrappings was: 1940 — 6,253 tons; 1948 — 8,282 tons; 1949 — 8,596 tons. Cardboard: 1940 — 6,620 tons; 1948 — 16,690 tons; 1949 — 14,175 tons.

E.D. Jones

PULPING POWER



Rotor of No. 4 size Jones Pulp-Master, shown in tile tank installation in a leading midwestern mill. Capacity 4000 lbs. 6½% stock.

The rugged, one-piece fabricated rotor of the PULP-MASTER, placed well above the bottom of the tank, gives stock vigorous, continuous circulation — yet allows junk metal to drop to the tank bottom.

Its vanes force the stock outward, where the impellers rub and refine it against the fixed refining discs. Baled pulp, waste paper, machine broke — even glassine and wet strength — is completely disintegrated in 10 to 40 minutes.

Over 140 sold to date. Ask your Jones representative for details — or write for Bulletin 1019-B.

Jones **PULP-MASTER**

E. D. Jones and Sons Company, Pittsfield, Mass.

BUILDERS OF QUALITY STOCK PREPARATION MACHINERY

Capital investment of up to £4 million by Associated Pulp and Paper Mills Ltd. to increase output of fine papers, and a new ordinary share issue at par in the ratio of one for every two held, have been announced by Chairman Sir Walter Massey-Greene, and it is further stated that the company will acquire the whole of the shareholding in Thomas Owen & Co. (Australia) Ltd. held by Thomas Owen & Co. Ltd., England. Five million new shares will bring capital to £10 million. Plans for the company include: The erection at Geelong of a paper mill with a capacity of 15,000 tons a year to manufacture writing papers. This mill should be operating by 1954. The establishment of a pulp mill near the Otway forests to treat eucalypt timbers and pine. It is expected that expansion of the Burnie (Tasmania) mill and the new Geelong mill will broadly cover Australia's requirements of fine papers until 1960.

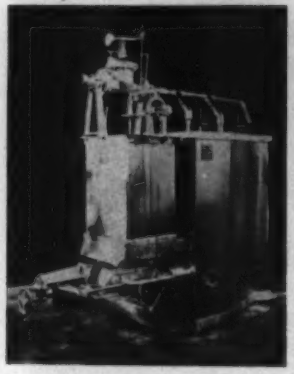
Three employees of the Nicolet Paper Corp., West De Pere, Wis., were recently retired. The combined employment time of the three employees totaled 147 years, 24 years each with Nicolet and the balance with American Writing Paper Co., former occupants of the mill. Bert M. Lewis, general manager, in behalf of the company presented each man with a Lord Elgin watch properly engraved with good-wishes and the dates of their employment. Jacob Rankins, second from right, 40 years service, William Desmond next, 50 years service, and brother Fred 57 years. Not one of the three ever experienced a lost-time accident.

PEOPLE

A. LELAND SLADE, JR., of Aiken, S. C., has been elected chairman of the State Forestry Commission. A. B. TAYLOR, Spartanburg, was named vice-chairman. GUY B. WHITENER, of Newberry, whose term on the commission has expired, is the retiring chairman.

It's the Poirier Dual Control

For Economy



QUALITY PRODUCTION

Standard Installation of Poirier Dual Control System

DEPENDABILITY

For Full Information Write

POIRIER CONTROL CO.

WATERVILLE, MAINE

Specialists in Stock Control Equipment for Pulp and Paper Mills

Walker Hamilton

WALKER HAMILTON has been elected president of the Riegel Paper Corp. Mr. Hamilton joined Riegel in 1921 and has been executive vice-president and general manager since 1945. JOHN L. RIEGEL, who has been president since 1936, will continue to serve as the principal executive officer of the company, with the title of chairman of the board.

WILLIAM H. CHRISTIAN has been promoted to the position of carton salesman for The Gardner Board and Carton Co. Mr. Christian will be located in Gardner's Pittsburgh office. He succeeds JAMES M. WATSON who died of a heart attack.

HAROLD J. VOORHIS has been promoted to the position of credit manager for The Gardner Board and Carton Co. Mr. Voorhis was formerly the company's tax accountant.

A. J. GLASSOW, vice-president and general manager of Brooks-Scanlon, Inc., Bend, Ore., has been appointed a member of the natural resources committee of the Chamber of Commerce of the United States. Mr. Glassow will represent the lumber, pulp and paper industry on the Chamber committee.

DAVID BLATT has been appointed general sales manager for the Bristol plant of the Seaboard Container Corp. He replaces EDWARD J. LAUTH, who has been advanced to the post of assistant to the president.

HAYWARD GILSON, formerly with Viking Paper Co., is now associated with D. P. Winne Co., Inc., twine house, 162 Chambers street, New York 7, N. Y.

J. J. CARROL, traffic manager, Oswego Falls Corp., has been elected chairman of the Transportation Council of the Associated Industries of New York State.

Clyde B. Morgan

CLYDE B. MORGAN, long prominent in the pulp and paper industry, has been elected president and a director of Rayonier, Inc. Mr. Morgan is returning to Rayonier of which he was vice-president from 1937 to 1941. Since 1941 he has been president of Eastern Corp. Before joining Rayonier in 1937, Mr. Morgan was executive vice-president of S. D. Warren Co. The office of president of Rayonier has been vacant since the resignation of EDWARD BARTSCH, November 14, 1950.

Ira D. Wallach

IRA D. WALLACH, vice-president and director of Gottesman & Co., Inc., and Central National Corp., has been elected to the newly created office of executive vice-president of Eastern Corp. He will be chief executive officer of the company pending appointment of a successor to its president, Clyde B. Morgan, who has been elected president of Rayonier, Inc. Mr. Wallach has been a director of Eastern Corp. since 1947 and a member of its executive committee.

S. AUSTIN BICKING for thirty years connected with S. Austin Bicking Paper Mfg. Co., Downingtown, Pa., has resigned as a director and treasurer. He has no plans for the future but will reside in Downingtown for the present.

DEANE A. HODAPP has been appointed a senior industrial engineer by Gardner. For the past several years he has been supervisor of the methods and standards department for the Hoosier-Cardinal Co., of Evansville, Ind.

W. J. Boucher

W. J. BOUCHER has been elected vice-president in charge of sales of the Fort Howard Paper Co. Mr. Boucher has been connected with Fort Howard for 29 years. He started in the shipping department as a shipping clerk and was then transferred to the purchasing department. He entered the sales department in 1926 as a sales correspondent. He was in charge of the Chicago sales office for some time and became assistant sales manager in 1931 and sales manager in 1946.

ROLAND A. PACKARD, widely known as an industrial engineer, has been named national director of the Pulp and Paper Machinery Division of the NPA. He has held key positions with General Electric, Ludlow Manufacturing Associates, and the Bagley and Sewall Co., of Watertown, N. Y. For 20 years he was chief engineer and consultant to the president of Smith Paper Co., in Lee. More recently Mr. Packard was executive vice-president of the Holyoke Machine Co. His new offices are located in the General Accounting Office Building in Washington, D. C.

Frank T. Roche, Sales Manager of Lily-Tulip Cup Corp., who was recently elected vice-president of the Paper & Twine Assn.

Letter To Editor

July 16, 1951

Mr. H. E. Dotzert,
Circulation Manager
Lockwood Trade Journal Co., Inc.,
15 West 47th St.
New York 19, N. Y.

Dear Mr. Dotzert:

In answer to yours of June 27, this will advise that we have received a copy of "University of Maine Lectures on Pulp and Paper Making" which was ordered some time ago.

I think it is one of the best books of this type that I have seen in recent years. I was particularly impressed with the method of presentation and I think the contents were so well illustrated that it should be a very valuable training aid for pulp and paper mill foremen. Both the University of Maine and the Lockwood Trade Journal are to be congratulated in collaborating on this work.

Sincerely yours,
THE FLINTKOTE COMPANY
K. W. Sauer
Plant Manager
CANEC Division

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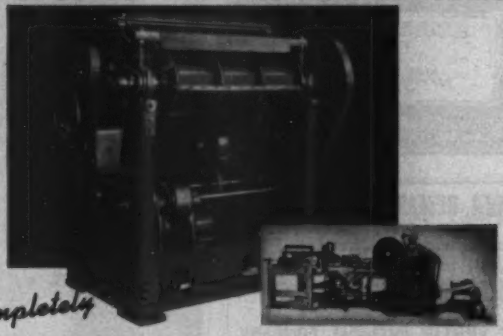

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Paper and Paper Bag Machinery Since 1898

FINANCIAL

Powell River Co., Ltd., Vancouver, B.C., net profit for the six months ended June 30 amounted to $4,245,914 or $3.16 per share of capital stock as compared with $4,065,725 or $3.02 per share for the same period of 1950. Consolidated profit before income taxes increased to $9,157,220 from $6,963,960, while provision for income taxes was sharply higher at $4,911,306 against $2,898,235. The figures are subject to audit and year-end adjustment and include the operations of subsidiaries for five months only.

Newsprint output was higher at 149,153 tons compared with 146,727 tons last year and demand continues to be very strong, with the company expecting to maintain maximum production and shipments for the balance of the year. Unbleached sulphite pulp output increased to 23,671 from 18,452 tons and of other products from 1,316 to 1,528 tons. All available sulphite pulp tonnage for the balance of the year has been sold.

Brown Co. on July 17 called for redemption on September 1, 1951 the remaining shares of its $6 cumulative convertible preferred stock not exchanged under its voluntary plan of recapitalization dated December 1, 1950 and finally expiring on August 20, 1951. On July 13, 1951 there were only 1,710 shares of the $6 stock unexchanged which represented 1.2 percent of that issue outstanding at the time of the original exchange offer.

The shares will be redeemed at $158 a share representing $102.50 call price and $55.50 accumulated dividends to September 1, 1951. Laurence F. Whittemore, president, stated that holders of the securities called for redemption were still entitled to exchange their $6 cumulative preferred shares for the two new preference stocks under the voluntary exchange offer until August 20, 1951 at which date the offer terminates. Shareholders exchanging under the plan will be entitled to accrued dividends on the two new preference stocks from June 1, 1951.

CONTAINER CORP. OF AMERICA
For the three months ended June 30

	1951	1950
Earnings before Federal taxes on income.....	$11,031,000	$4,018,000
Provision for Federal taxes on income.....	6,839,000*	1,687,000*
Net earnings	$4,192,000	$2,331,000
Net earnings per share —Common Stock	$2.07	$1.13

*Federal taxes at 62% in 1951 and 42% in 1950.

Nekoosa-Edwards Paper Co., Port Edwards, Wis., declared a 40 cent per share dividend payable September 10 to stockholders of record at the close of business August 31.

Keyes Fibre Co., manufacturers of molded pulp products and fibrous plastic articles, report net profit of $771,580 for the six months ended June 30, 1951, after all charges including provision for federal income and excess profits taxes. After deducting preferred and Class A dividends, the balance amounted to $3.42 per share on the 184,914 shares of common stock outstanding at the end of June. This compares with net profit of $603,138 for the first six months of 1950, equal after preferred and Class A dividends to $2.97 per share on 148,955 shares of common outstanding on June 30 of that year.

Net sales of the company increased approximately 44 percent in the first six months of this year over the corresponding period of 1950, reaching $6,057,602 compared with $4,199,431 a year ago. The profit before federal taxes on income more than doubled, to $2,030,474 against $972,804 in the first six months of last year.

St. Regis Paper Co. reports record net sales for the first six months of 1951 of $100,665,458, compared with $70,937,809 for the like period of last year. Net income, after provision for Federal taxes, was also at a new high, amounting to $9,189,273, against $4,212,281 for the corresponding six-month period of last year.

A regular quarterly dividend of 25 cents per share on the common stock, payable September 1 to stockholders of record August 3 has been declared. Regular payments previously have been at the rate of 15 cents per share quarterly.

FRANK C. VAUGHAN
Consulting Engineer
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FOR ALL EQUIPMENT EXPOSED TO CORROSION BY SULPHITE ACIDS OR OTHER CORROSIVE AGENTS
MICHIGAN STEEL CASTING CO.
DETROIT 7, MICHIGAN

On July 17th and 18th, the entire sales organization of Stocker Manufacturing visited the Camp Manufacturing Co., Franklin, Va., with whom Stocker is affiliated. The occasion of the visit was the beginning of the Southeastern Jobbers' Convention at Virginia Beach. It gave the sales organization an opportunity to see the new lightweight fourdrinier machine which has just recently been put into operation in Franklin. Included in the picture are Jim Camp, president; Hugh Camp, vice-president and Clem Gouldman, sales manager of the Camp Manufacturing Co.

SUPPLIERS

R. A. Goodwillie

BELOIT IRON WORKS has opened an office at 1201 Terminal Sales Building, Portland, Ore. Phone: Atwater 3112. R. A. Goodwillie who has been recently concentrating on the West Coast will be in charge.

GENERAL ELECTRIC CO. reports that Ralph E. Carter, of Schenectady, a purchasing agent for the company, has retired after 46 years of service. George F. Simmons, Barneveld, N. Y., has been appointed to succeed Mr. Carter as purchasing agent of general products.

BENSING BROTHERS AND DEENEY, makers of printing inks, have appointed Norman H. Cooper as sales manager and Joseph H. Gillen as purchasing agent, with headquarters at the company's home office in Philadelphia, Pa.

REICHHOLD CHEMICALS, INC., Detroit, have opened executive offices in the International Building, Rockefeller Center, 630 Fifth Avenue, New York 20, N. Y., which space will also house Reichhold's export division which had outgrown its old quarters in the RCA Building.

A. H. Borchardt has been elected a vice-president of Worthington Pump and Machinery Corp. Mr. Borchardt will have the overall responsibility for the sale of the corporation's entire line of pumping equipment, including centrifugal, reciprocating and vertical turbine pumps.

NATIONAL ANILINE DIV., Allied Chemical & Dye Corp., have appointed H. J. Daigneault and M. A. Conner vice-presidents with headquarters at 40 Rector street, New York. Both have been associated with National Aniline for over 30 years. Mr. Daigneault was, for many years, manager of the New England territory and more recently has been director of domestic sales. He will continue to direct and coordinate National Aniline sales of dyes, organic chemicals and synthetic detergents. Mr. Conner has held various positions in the Production Division, both at the Buffalo, N. Y., plant and in New York, and has recently been assistant to the general manager. In his new position he will concentrate upon manufacturing activities and long-range planning.

DOW CHEMICAL CO. has announced that Richard W. Dornan will handle the sale of coatings materials for the Cleveland territory.

Earl C. Smith, active for the past 25 years in the field of chemical plant design, construction and operation, has joined Merritt-Chapman & Scott Corporation as a sales engineer. He will work under Myles C. McGough, vice-president in charge of the company's Industrial and Building Construction Division.

FORESTRY

NEW FOREST MANAGEMENT UNIT

OTTAWA—The largest and most important forest management unit in Ontario, an estimated one million acres of woodland, is being set up in the Batachewana and Goulais area north of Sault Ste. Marie, with E. F. Anderson and Harry E. Graham, Lands and Forests Department Timber Management Officers, being named to set up the big project. It is intended to clear all merchantable timber in the area in a single operation.

Abitibi Power and Paper Co., Ltd., by agreement with the Ontario Government and Algoma Central Railway, has held largely the cutting rights in the new unit.

STUDY FOREST CONSERVATION

ALBANY, Ga. — For the purpose of considering means of promoting forest conservation in this area, 55 pulpwood dealers for International Paper Co. and representatives of public agencies gathered July 17. Presiding at the meeting were Pete Albrecht, of Albany, conservation forester for International Paper Co., and J. J. Tucker, district superintendent.

Last year International Paper Co. distributed 700,000 pine seedlings free of charge to Georgia landowners and 4-H Club members.

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We make a specialty of "Ready Dressed" cogs which are READY TO RUN the moment driven and keyed. Write for circular "C" and instruction sheets free.
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UNIFORMITY
APPLETON FELTS
APPLETON WOOLEN MILLS

AMERICAN PAPER AND PULP ASSOCIATION'S PAPER PRODUCTION RATIO REPORT

(Production as per cent of normal capacity)

COMPARATIVE WEEKLY SUMMARIES

	June 16	June 23	June 30	July 7	July 14
1951	101.5	99.4	95.7	62.6r	95.6
	June 17	**June 24**	**July 1**	**July 8**	**July 15**
1950	97.3	99.5	97.7	51.8	92.9

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1950	92.6	95.6	96.7	95.4	96.4	97.7	85.3	99.6	96.1	101.0	99.6	91.2	95.8
1951	99.3	101.3	102.3‡	103.1‡	102.5‡	100.2‡							

‡ Preliminary.
r Revised.

COMPARATIVE YEARLY SUMMARIES

	1944	1945	1946	1947	1948	1949	1950	1951
Year to Date	87.3	87.5	99.2	103.5	97.8	85.6	94.1	99.9
Year Average	88.1	89.4	100.1	104.3	96.2	88.6	95.8	

PAPERBOARD OPERATING RATIOS†

	June 16	June 23	June 30	July 7	July 14
1951	103	103	103	62	83
	June 17	**June 24**	**July 1**	**July 8**	**July 15**
1950	93	94	94	55	82

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1950	88	92	91	92	91	94	82	100	96	102	101	93	94
1951	102	103	104	105	104	103							

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

Note: The chart shows the ratio through December 1950 on the basis of 6-day capacity. Beginning with January 1951 the ratio is shown on the new basis of normal 6- and 7-day capacities. Corresponding weekly and monthly ratios for 1950 on the new basis, shown in the tables above, are somewhat lower.

Paperboard operating ratios continue on the basis of a 6-day week.

† Per cents of operation based on "inch-hours" reported to the National Paperboard Association.

KIMBERLY'S STUDENT FORESTERS

The woodlands department of Kimberly-Clark Corp. again is sending student foresters into its timber holdings of Michigan and Canada. Approximately 40 student foresters are on the payroll.

The young men are members of cruising parties who measure the timber, sketch forestry maps of the size, number and species of trees and work on permanent sample plots to study growth, yield, mortality and regeneration of trees.

This summer in Michigan, the forestry apprentices are studying chemical treatment of trees for de-barking, using three different chemicals in various combinations to find which is most economical and effective. Kimberly-Clark is conducting this study in conjunction with Michigan State College in a program similar to those underway in New York, Oregon and Washington.

Student cruisers travel in pairs as part of a larger crew unit. No student is ever permitted to go into the woods alone. One of the pair usually is a veteran of one or more summer cruises, the other is a "rookie." The veteran is known as the estimator, the other member as the compass man. Newcomers in the cruising program must be taught to recognize the various species of trees, how to handle an axe and how to use a compass.

Wherever they work or whatever may be their jobs, the boys watch and check at all times for any abnormal amount of disease and insect attack.

The student foresters already have examined lands of the corporation in the vicinity of Sault Ste. Marie, Michigan, where forest tent caterpillars have reached epidemic proportions. Although trees have been de-leafed by the caterpillars, they will leaf out again this year. While this year's growth will be lost, the trees will not die.

The number of forestry apprentices in Michigan ranges from 4 to 10 each season, depending on the woodlands department needs. Canada's student cruisers number between 10 and 15 at Longlac and the same number at Spruce Falls.

OBITUARIES

James T. McGehee, Jr., former president of the Macon Paper Co., died suddenly of a heart attack at his home in Macon, Ga., on July 15.

Elmer Frederick Sommer, 48, Beloit Iron Works sales engineer, died suddenly July 6. His 32 years of service with Beloit Iron Works began in 1919. He was chief of the service department for ten years, and he spent two years in sales work.

Mathew N. Smith, 79, president of the Escanaba Paper Co., died of a heart attack recently.

Mr. Smith was also president of the Manistique Pulp and Paper Co. and director of Mead Corp.

Christopher M. Abbott, 75, president of the Abbott Paper Corp., Jamestown, N. Y., since 1936, died suddenly July 11.

Ralph Kehl, director of the Industrial Relations Department of the Kimberly-Clark Corp., was killed July 18 in an automobile collision near Hortonville, Wis.

Mr. Kehl, a member of the corporation's operating management committee, had been an employe of the corporation since 1932. Starting as an engineer, he worked in various operating positions in Neenah until 1940, when he was transferred to the Niagara Falls mill of the corporation as personnel superintendent. He returned to Neenah in 1944 as manager of the Badger-Globe mill and later became manager of both that and the Lakeview mill.

In 1946 he became assistant to the general superintendent of the corporation, and later that year took over as head of the newly-created manpower division of the corporation's industrial relations department. He continued in that capacity until he became director of the department last December.

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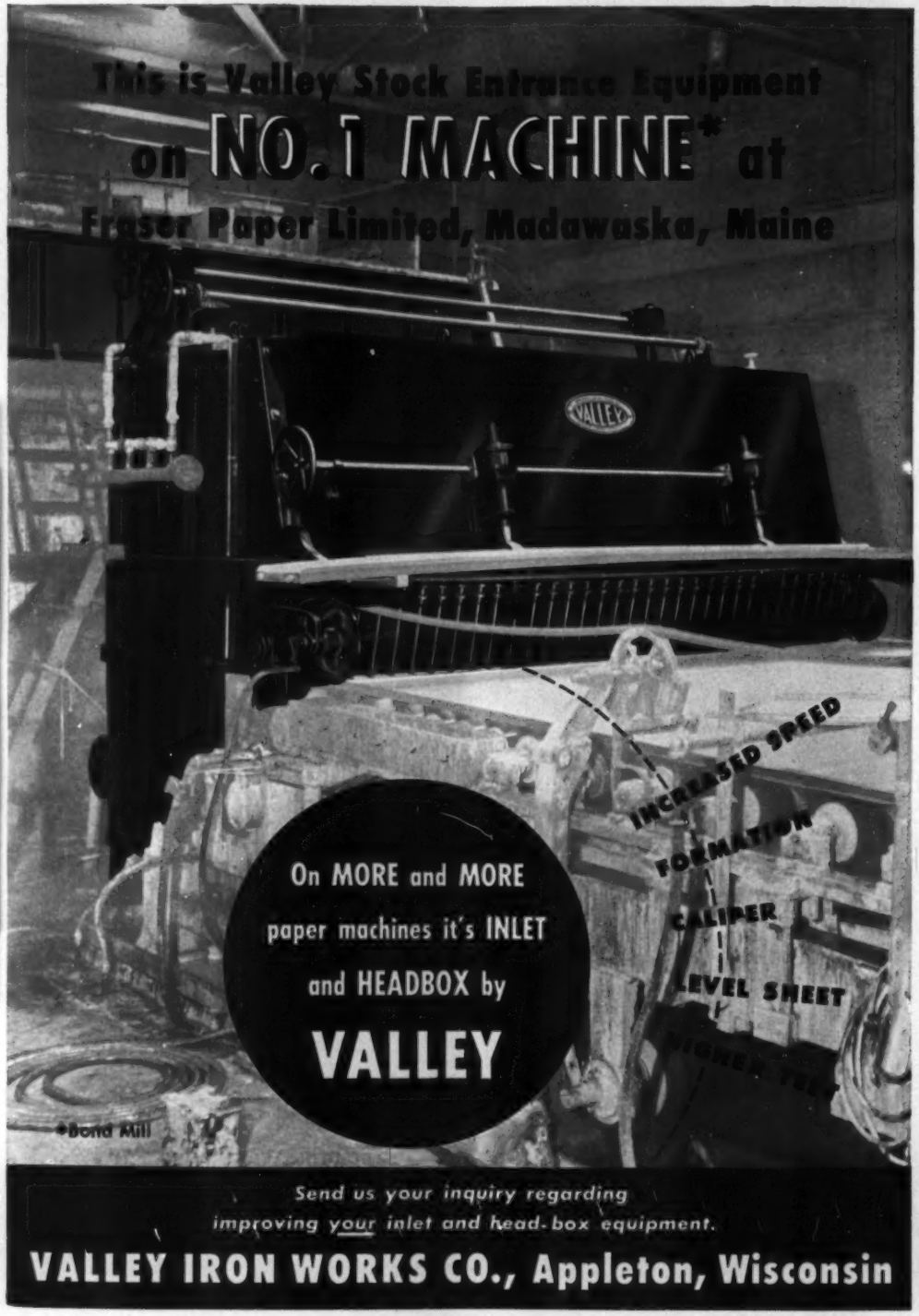

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MEN WANTED—POSITIONS OPEN

We can place—Production manager Cylinder board mill $8,000-$12,000 year; assistant paper mill superintendent, nights; asst. supt. Cylinder board mill; asst. supt. for lightweight kraft carbonizing tissue papers; pulp mill foreman, rotating shifts; bleach house foreman; sulphite mill foreman.

Master mechanics; mill engineers; head millwright; chief power plant engineers; chemists for pulp and paper mills, $3600-$8000 yr.; machine foreman Cylinder, Fourdrinier and Yankee machines; paper salesmen to cover retail chain stores, also sales supervisor to cover the jobbers; shipper-receiver for board mill; head beater engineer board mill $4000-$5000; sales engineer with technical education, mostly inside work, some traveling; third hands, fourth hands and fifth hands; back tenders and machine tenders.

LIST YOUR CONFIDENTIAL APPLICATION WITH US to keep informed of attractive positions open in the pulp and paper mills.

CHARLES P. RAYMOND SERVICE, Inc.
294 Washington St., Boston 8, Mass.
SPECIALISTS IN PLACING PULP AND PAPER MILL EXECUTIVES
J-27

HELP WANTED

CHEMICAL ENGINEER

Young graduate with some paper mill experience. Must have executive ability. This is an opportunity for a man with a large organization who desires to accept broader responsibilities in a smaller company. Desirable location in the East. All replies confidential.

WRITE TO BOX 51-374, CARE PAPER TRADE JOURNAL

J-27

BOXBOARD MILL MANAGER

One machine mill located mid-west needs manager experienced all phases production high quality folding boxboards. Permanent position and good compensation for competent man qualified assume full responsibility. Reply in confidence. Box No. 51-378 care Paper Trade Journal. A-3

"WANTED PAPER MILL ENGINEER"

Established paper mill in central Wisconsin has opening on Engineering Staff for trained Civil Engineer. Experience desirable, but recent graduate will be considered.

Furnish references and details of experience and training. Excellent opportunity in a progressive organization. Address Box 51-381 care Paper Trade Journal A-10

WANTED

BEATERMEN, BACK TENDERS, and one MASTER MECHANIC for small mill now operating seven days a week. Good wages and good living conditions. Write to George Congdon, Box 51-373 c/o Paper Trade Journal. J-27

HELP WANTED

TECHNICAL DIRECTOR OR ASSISTANT

Specialty Kraft Paper Mill

Experienced in carbonized tissue, light weight kraft specialties, colors, etc. Excellent opportunity, liberal salary, permanent. Mill located in South. Write giving complete resume, salary requirements. Confidential. Box No. 51-359 care Paper Trade Journal. J-27

AGGRESSIVE SALES ENGINEER

Opportunity to join well known established machinery firm. Technical ability and paper making background necessary. Knowledge of beating and pulping process and equipment desirable. Some sales experience or sales inclination helpful. Must be able to travel in territory. Tell us about yourself in your letter. Address Box 51-301 care Paper Trade Journal. TF

HELP WANTED—MALE

SALES MANAGER—ASSISTANT SALES MANAGER

Long established middle west manufacturer of specialty equipment for pulp and paper mill wishes to engage services of man who has knowledge of mill operation. Prefer man who has been selling in Middle West and New England mills but will also consider others possessing suitable personality, education, and mill experience background who are interested in a position where initiative and aggressiveness will pay off in a growing business. Work will consist of traveling about four months of the year with balance of time devoted to working in home office handling correspondence with customers. Applicants should state age, education, marital status, and complete experience background in first letter. Write Box 51-360, care Paper Trade Journal. J-27

PLANT ENGINEER—Bldg. Materials and Plastic Floor-covering Manufacturer, new large-scale New Jersey plant. Applicants must have minimum 6 years plant experience in maintenance, operations and design. Must be familiar with wide variety of process plant equipment and utilities systems. Must be college graduate engineer. Please submit resume with reply. Box No. 51-290, care Paper Trade Journal. A-3

SALARIED POSITIONS $3,500 to $35,000. We offer the original personal employment service (established 41 years). Procedure of highest ethical standards is individualized to your personal requirements. Identity covered; present position protected. Ask for particulars. R. W. BIXBY, INC.—117 Dun Bldg., Buffalo, 2, N. Y. TF

WANTED — Machine Tenders and Back Tenders for corrugating medium and liner mill. Fourdrinier and cylinder machines. Located in Western Pennsylvania; good working conditions; pleasant surroundings and very good labor relations. Call collect—Tarentum 1470. TARENTUM PRODUCTS CORPORATION, Tarentum, Pa. TF

HELP WANTED

Wanted—Agents, brokers in Pennsylvania, Illinois, California, Oregon, Washington and Texas on commission by highly rated paper convertor manufacturing in New York cellulose padding used by confectioners, soap manufacturers and many other lines. Address Box 51-388 care Paper Trade Journal. J-27

IN SOME MILL there is an experienced Fourdrinier Machine Tender looking for promotion. Have opening for an Assistant Superintendent, working with two others (four) in a two machine M.G. Specialty mill located in Lake States. Replies will be held in confidence; give complete details about self in first letter. Reply Box 51-384 Paper Trade Journal. J-27

MID-WESTERN FOURDRINIER SPECIALTY MILL has opening for experienced Production Superintendent. References required. Address Box 51-378 care Paper Trade Journal. A-31

WORKING SUPERINTENDENT for small fast growing Eastern mill making lightweight specialties. Cylinder machine experience essential. State qualifications and salary expected. Address Box 51-67 care Paper Trade Journal. TF

WANTED — Machine Tenders on Cylinder Machine in progressive test liner board mill making .016. Good opportunity for right man. Address Box 51-364 care Paper Trade Journal. A-3

WANTED—Back Tenders in mill making jute liner and corrugating medium. Good opportunity for advancement. Address Box 51-365 care Paper Trade Journal. A-3

PLANT SALESMAN wanted for established Philadelphia Paper Jobber. Can use man looking for a better opportunity or one that wants to make an investment in a business. We carry items for industrial plants and retail outlets. Address Box 51-361 care Paper Trade Journal. J-27

WANTED—Tour Boss for .016 liner board mill making 70 tons per day. Must be capable. Give detailed experience and background. Address Box 51-366 care Paper Trade Journal. A-3

FINISHING ROOM FOREMAN experienced in flat-cutting and rewinding. Immediate employment, high salary. Address Box 51-370 care Paper Trade Journal. A-3

SALESMAN. Experience in converting field, packaging and decorated papers. Plant near New York City. Address Box 51-382 care Paper Trade Journal. J-27

MASTER MECHANIC for progressive board mill. Good salary, good working conditions. Address Box 51-383 care Paper Trade Journal. A-10

SITUATIONS WANTED

SALESMAN—10 years experience selling to paper manufacturers. 3 years sales manager paper jobbing house. Wish to represent paper mill, converter or company serving paper manufacturers in Middle Western States. Address Box 51-354 care Paper Trade Journal. A-3

SITUATIONS WANTED

ENGINEERING EXECUTIVE

Seeks new connection. Competent manager of paper mill engineering, maintenance, and power plant departments. Thoroughly experienced in paper production, labor relations, cost control procedures, and purchasing. Qualified to direct planning and construction of large scale improvement and expansion programs. Technical graduate. Outstanding references can be provided. Address box 51-377 Paper Trade Journal. A-10

PAPER CONVERTING ENGINEER

with 6 years actual experience on bag, coating, waxing and printing equip. in design and maintenance, and 15 yrs. exp. machine and tool design. Age 40, married, energetic and efficient, good education, and would like to reside in the South West. Box 51-380 c/o Paper Trade Journal. A-10

PLANT MANAGER—Paper and Board and their conversion; wants challenging opportunity. Highly successful in organization; administration; labor relations and high level production. Presently employed. Address Box 51-4[illegible] care Paper Trade Journal. J-27

SITUATIONS WANTED

EXECUTIVE ACCOUNTANT COMPTROLLER

Capable, cost minded administrative executive, age 40, available immediately. Fully experienced in multi-plant paperboard, folding carton and printing industry. Box 51-197, Paper Trade Journal. A-10

PRODUCTION MANAGER

Paper Bag Mfg.—over 30 years experience—thoroly familiar all phases including Scheduling, Inventory control, Mill specifications and Sales. Also experience Purchasing & Traffic. A good all-around man for your organization. Excellent references. Address Box 51-386 care Paper Trade Journal. J-27

MECHANICAL ENGINEER—45, 24 years experience maintenance and construction work in pulp and paper mills. Wants position as Superintendent of Maintenance and construction department. Now employed. Reason for change strictly personal. Interested in permanent job only. Address Box 51-380 care Paper Trade Journal. A-3

SITUATIONS WANTED

MASTER MECHANIC—20 years experience in board, chips or tissue. Can cover all crafts. Experienced supervisor, can furnish references. Available August 15th. Address Box 51-375 care Paper Trade Journal. J-27

MAN WITH LONG EXPERIENCE in the paper industry line returning California August, would like to negotiate with firms who desire representation in the West. Address Box 51-385 care Paper Trade Journal. A-3

FOR SALE

FOR SALE

Toilet Wieders

2—72" Hudson-Sharp (Surface type winder)
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Tel Bigelow 3-3720 J-27

FOR SALE—PAPER COATING RODS — Wire wound EQUALIZERS and blank rods. DE NEVE & CONSLER CO., Box 817, Rochester, 3, N. Y. J-27

FOR SALE

1—Sandusky Couch Roll—126" drilled face x 22" diameter.
1—123" 3 bowl revolving reel.

BEARINGS
72—Top and bottom Dryer Bearings 7" diamter x 12" long.

BEATERS
1—Dilts Iron Tub Laboratory Beater. Beater roll 14" diameter x 10½" face.
1—Noble & Wood Cast Iron Beater—1000# capacity—roll newly refilled.

CALENDER STACKS
1—9 roll 68" Calender Stack.
1—2 roll pressure calender—32" x 108".
1—72" 4 roll calender stack. (Extra heavy duty).
1—84" Smoothing Calender Stack, 2 Iron Rolls, 2 Cotton Rolls.

CHEST
1—Cast Iron Stock Chest, 23' long x 8' high. (With agitator).

CHIPPER
1—36" Murray 4 knife Chipper—anti-friction bearings.

CRUSHER & HAMMERMILL
1—Murray Chip Crusher.
1—Jeffrey Hammermill.

CYLINDER MOLDS
2—30" diameter x 72" face.
1—36" diameter x 79" face.
2—36" diameter x 54" face.
1—36" diameter x 90" face.
1—48" diameter x 72" face.
4—36" diameter x 78" face.
1—30" diameter x 92" face.
1—36" diameter x 72" face.

DRIVES
1—#6½ Reeves Drive.
1—#4 Reeves Drive
1—Reliance Electric Drive, complete with 8 gear head motors.
1—#3 Reeves Drive (totally enclosed).

DRYERS
1—Complete unit, consisting of 6 dryers, 30" diameter x 58" face, including frames, gears, anti-friction bearings.
7—36" diameter x 49" face.
1—36" diameter x 96½" face.
1—36" diameter x 145" face.
1—24" diameter x 130" face.
1—48" diameter x 79" face.
3—Dryers 48" diameter x 134" face.
1—24" diameter x 92½" face.
3—28" diameter x 49" face.
1—84" diameter x 46" face.
1—60" diameter x 68" face.
1—48" diameter x 66" face.
2—36" diameter x 66" face.
1—30" diameter x 61" face, complete with frames.
8—24" diameter x 60" face.

GUILLOTINE CUTTER
1—60" Cutter.

FLAT SCREENS
1—6 plate Shartle Flat Screen
7—Packer, 12 plate, roller shoe type.

FRAMES
Vertical frames for 100 dryers, 48" diameter, with bearings.

JORDANS
1—Herne Jordan.
2—Noble & Wood Mammoth.

LIME SLUDGE FILTERS
2—IMPCO Lime Sludge Filters, vacuum type, 5' diameter x 4' face.

MOTORS
Write us regarding your requirements.

PRESSES
3—Sets Primary Presses, complete, 145" face. Anti-friction bearings. Also all types of rolls for 145" wet end.

PULLEYS
Various cone and grooved pulleys.

PULPERS
1—Jones Pulper. Complete with motor and drive.
1—Noble & Wood Pulper—Iron Tub.
1—Lannoye Pulper.

PUMPS
Various sizes of Centrifugal and Plunger Pumps. Write us regarding your particular requirements.
4—Shartle Brothers circulating pumps, each 4,000 g.p.m.

REEL
1—123"—3 bowl Revolving Reel.

REFINERS
2—#1 Claflin Refiners.

ROLLS
Felt, Table, Press, Breast, Couch, etc. Various sizes and types. (Bronze, Rubber, Iron, etc.)

ROTARY SCREENS
1—#2 Bird Rotary Screen.
1—#2A Bird Rotary Screen.

SAVEALLS
1—#5 Bird Saveall.
2—Savealls, 36" diameter x 136" face cylinder molds, iron end vats.

SHEETERS
1—60" Moore & White Sheeter with Layboy and 10 roll backstand.

SHREDDERS
2—Daniels Rag Cutters.

SLITTERS & WINDERS
1—42" Cameron—Type 40-4-B
1—118" 2 drum Waldron
2—112" Cameron—Type 18.
1—104" Beloit two drum winder.
1—42" Cameron Constant Tension with pneumatic control.
1—42" Cameron—Type 6.
1—82" Cameron—Type 8-5.
1—62" Cameron—Type 26-3A.
1—42" Johnstone Slitter.
1—92" Moore & White 4 drum winder.
1—82" Cameron—Type 10-10.
1—87 Cameron Type 10.
1—54 Cameron Type 10-6.

STOCK PUMPS
1—10 x 30 Shartle Duplex.
1—7 x 16 Shartle Duplex.
1—10 x 20 Triplex, with motor.
Advise us as to your requirements.

SUCTION COUCH ROLL
1—Sandusky Couch Roll 126" drilled face x 22" diameter

SUCTION BOXES
2—136" face Suction Boxes.

THICKENER
1—IMPCO Thickener—Cylinder mold 36' x 78.

VACUUM PUMPS
1—N-82 Nash, for Fulton-Midwest System.
1—#4 Nash Hytor Vacuum Pump.

WET MACHINE
1—77" Rogers Wet Machine.

YANKEE DRYERS
1—48" Face x 84" Diameter, Frames & Bearings.
1—68" face x 60" diameter including frames and anti-friction bearings.
1—64" face x 60" diameter, including frames and bearings, also 2 dryers 20" diameter x 64" face.

We are always in the market to purchase your surplus or idle machinery. What have you to offer?
Wanted Cylinder and Fourdrinier Machines (complete mills).

Paddy Ross, Pres. **J. J. ROSS COMPANY** Ben Kurz, Treas.

250 Freilinghuysen Ave. Tel.—Bigelow 3-3720 Newark 5, N. J.

FOR SALE

BEATERS—1 – Noble & Wood CI tub 1800# beater.
1 – 2800# CI tub beater.

BIRD SCREENS—4 – #2 Bird Screens with copper tubs, just removed from one of the outstanding paper mills.

CALENDER ROLLS—
1 – 16 x 124
5 – 10½ x 124
2 – 14 x 87
1 – 12 x 87
1 – 10 x 87
1 – 16 x 84
1 – 12 x 84
5 – 7⅓ x 84
1 – 16 x 80
1 – 14 x 80
1 – 12 x 80
1 – 14 x 76
3 – 12 x 76
1 – 14 x 64

CREPING DRYER—1 – Creping dryer with 48 x 91 Downingtown dryer, practically new, with Downingtown drive on antifriction bearings. Rubber covered pressure roll.

CHIPPER—1 – Carthage 8 knife chipper in A-1 condition. Completely overhauled recently.

CONE PULLEY—1 – Practically new 35-15/16 x 34-1/16 x 30" face with 3-15/16 bore. Multiple arm for high speeds.

COUCH ROLLS—1 – 24 x 112 rubber covered couch roll.
1 – 16½ x 94 rubber covered couch roll.
4 – 24 x 72 rubber covered couch rolls. Mounted on antifriction bearings.

CYLINDER MOULDS—5 – 36 x 110 Improved Paper Machinery cylinder moulds.
4 – Cylinder moulds, 36 x 72 mounted on antifriction bearings.
2 – Cylinder moulds 36 x 84.

DECKERS—5 – Improved deckers 36 x 110.
1 – decker, 36 x 84.
4 – deckers, 36 x 72, mounted on antifriction bearings.

DRYERS—1 – 36 x 88 dryer.
1 – 48 x 91 dryer, for 60# steam pressure, in A-1 condition.
2 – 48 x 104 dryers.
1 – 48 x 150½ dryer.
1 – 30 x 132 baby dryer for smoothing press.

FOURDRINIER WET END—1 – 90" x 50' Moore & White wet end with 4 brass suction boxes.

JORDANS—2 – Emerson #2 Jordan with 150 hp wound rotor motors and controls.
2 – Black-Clawson #2 Jordans with 150 hp wound rotor motors and controls.
2 – Mammoth Sr. Jordans.
2 – Emerson #1 Jordans with 100 hp motors and controls.
1 – Monarch Jordan with 75 hp motor and controls.
1 – Majestic Jordan with stainless steel filling and new head.
1 – Jones Imperial Jordan with ¼" stainless steel filling.

LABORATORY BEATER—1 – Appleton 1# laboratory beater.

PIPE FITTINGS—5 – New 8" elbows.
6 – 12" new elbows.

PRESS ROLL—3 – 14 x 91.

PUMPS—3 – Warren stock pumps 12" suction by 5" discharge.
1 – 8 x 4 fan pump.
1 – Hayton chest cycling stock pump.
1 – Shartle Miami agi-flow pump for 120' head, 1500 gpm and also for 3600 gpm with 80' head.

REELS—1 – Beloit 2 drum upright reel with steel reel shafts, 104" face and set of unwind stands.

REWINDER—1 – Noble & Wood, mounted on antifriction bearings. This rewinder has reversing mechanism and also motor. This machine was just removed from one of the outstanding paper mills in the U. S. A.

SLICE—1 – Voith inlet slice, 117¼" between ways with motor and holey roll.

SHREDDER—1 – Shartle Shredder for 20 tons paper per day.

SUCTION BOXES—1 – 72" suction box with filter top.
1 – Brass suction box for 90" wire.

TRANSFORMERS—3 – 100 kva Westinghouse, type SK transformers, 4800/2400/240/120, 60 cycle, single phase. Factory rebuilt.
25 – New ¼ hp Westinghouse motors, 25 cycle, 220 and 110 volts, 1440 rpm.

VACUUM PUMP—1 – 10 x 16 Connersville pump used on brass suction boxes.

VORTRAP—1 – 4" steel Vortrap.

WASHERS—1 – 3 Stage Improved Paper Machinery washer with cylinders 36 x 110, agitators or repumpers with complete drive and right-angle reduction gear and motor.
1 – 36 x 84 washer with agitator, right-angle reduction gear and motor.
4 – Wolf washers with cylinder moulds 36 x 72, and couch rolls 24 x 72, mounted on antifriction bearings.

WET MACHINES—1 – Bagley-Sewell 86" machine.
1 – Rogers wet machine with cylinder mould 48 x 72" on antifriction bearings, steel vat.
1 – Small Rogers wet machine with cylinder mould 30 x 64" on antifriction bearings.
1 – 74" wet machine with CI end vats, rubber covered couch rolls with doctor blade trip.

PAPER MILL STORES **P. O. BOX 40** **LOCKPORT, N. Y.**

J-27

FOR SALE

FOR SALE

32—42" dia. x 132" face Black Clawson Dryers.
4—42" dia. x 80" face Dryers complete with frames, gears and bearings.
4—30" dia. x 120" face High Pressure dryers tested 250#.
1—24" dia. x 130" face Bagley & Sewall Dryer.
1—106" Winder & Slitter, Langston Type, Drums 17½" x 107". Designed to wind rolls 50" dia. Anti-friction bearings. Also 15-30 HP Motor & variable speed Motor Control.
1—No. 2 Bird Rotary Screen.
6—Couch Rolls 20" dia. x 110" face, 2" new rubber.
1—Top Roll for Extractor 18" dia. x 110" face 1" new rubber.
1—Hamblet 55" Single Knife Rotary Cutter, complete with No. O, Class C Reeves Drive.
1—Suction Roll 14" dia. x 71" face.
1—Dandy Roll (NEW) 12" x 108" with stands.
1—Smith & Winchester 56" Undercut Trimmer, complete with motor.
1—G. E. 60 H.P. Bariable Speed Turbine complete with Falk Gear Reducer. Ratio 5.28-1.
4—8 Plate Sandy Hill Packer Screens.
2—12 Plate Sandy Hill Packer Screens.

OSBORNE PAPER MILL EQUIPMENT CORP.

FULTON, NEW YORK TEL. 54

J-27

FOR SALE

1—100" number 15 Cameron slitter & winder
1—100" Cameron Slitter part
1—30x100" face suction press roll
1—Brand new Aills Chalmers stream harker with reducer and pump, in original crate
2—Hydraulic presses, 500 ton, plates 30 x 32, with pump
1—30x240" suction couch roll with gear drive
3—Rubber covered press rolls 32" dia. x 232" face, 1¼" rubber
1—Granite top press roll 36 x 231" face
2—237" Vickery doctor assemblies, one right hand and one left hand
1—Harmon twelve plate screen, plates cut about .014, with scraper attachment
1—100" Voith Slice
5—Dryers 60 x 174", 30—48" x 46"

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J-27

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FOR SALE

FOR SALE

2 good used 8 plate Packer Screens with 3 new Witham vats

1—Sandusky Suction couch roll — 14-9/16" diameter — will take sheet 70" to 106"

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Stroudsburg, Pa.

A-18

GOOD VALUES FOR SALE

52" Cameron type 8 model 5 Slitter.
42" Cameron 26-2A Slitter, like new.
72" Cameron type 8 model 10 Slitter.
76" Cameron Rewinder.
40" Kidder type CH Rotary Slitter.
42" Moore & White Sheeter with Layboy.
45" Hamblet Sheeter.
49" and 56" Finley Sheeters.
110" Hamblet Sheeter with extension delivery and back-stands.
36" Beck Sheeter, no layboy.
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NEW Baling Presses, both hand and power.
NEW Hamblet Sheeters, any size, for any purpose.

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60" Rotary Kidder, 3 color printing press, prints with flash dry inks, using Stereotype plates; includes waxing head and chilled roller, $7,500; 48" Kidder spot cutter with 10 sheet accumulator, $3,500; 20" Beck Sheeter, $2,000; 42" paper rewinder, $1,000. S. B. Behrens & Co., 115 Onderdonk Avenue, Brooklyn. Phone EV 6-0005. J-27

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1—Premier Type U-3 Colloid Mill, has had little use, in excellent condition. Address Box 51-352, care Paper Trade Journal J-27

FOR SALE—NEW ALL BRONZE FOURDRINIER WIRES AS FOLLOWS: 10/10 MESH 2-100"x51" 5". 2-105"x23" 5". 1—108"x35" 5" and 1—108"x43". MADE BY INTERNATIONAL WIRE WORKS. PRICE .55 cents square foot, or best offer. All prices FOB Miami, Florida.

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FOR SALE—65" Seybold Paper Cutter; 36" Slitter & Rewinder. 48" Sheeter with Layboy; 29 x 40 Thomson Platen Die Cutter; 6" Brightwood Box Machine. Address Box 51-217 care Paper Trade Journal. TF

FOR SALE—1—122" Heavy Duty Single Knife Horne Cutter, suitable for Board or Pulp. Address Box 51-275 care Paper Trade Journal. TF

FOR SALE

PAPER MILL EQUIPMENT

76" Cameron type 8 model 10 Slitter.
75" Moore & White Rewinding Reel.
52" Cameron type 8 model 5 Slitter.
40" Kidder type CH Rotary Slitter.
30" Hobbs shear cut Slitter.
42" Moore & White Sheeter with Layboy.
49" Finley Sheeter with Hamblet single pile Layboy.
56" Finley Sheeter.
100" Dillon Sheeter with 10-roll Back-Stand.
38" Acme Automatic Power Paper Cutter.
#13 Industrial Paper Shredder.
NEW Hamblet Sheeters, any specification.
NEW Balers, both hand and power.

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PAPER COATING MACHINERY MANUFACTURERS — Waxing, Oiling, Carbon Laboratory Coating and Treating and Flat Ream Measuring and Converting Machines. New improvement. THE MAYER MACHINE COMPANY, INC., 1313 Buffalo Road, Rochester, 11, N. Y. TF

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Serviceable Grocery Bag Machine
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Recent Model Potdevin preferred.

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#8 or #9 Nash Vacuum Pump
By Paper Manufacturer
Advise Full Details
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J-27

WANTED—Brightwood Box Machine, Shredders, Evaporators, Generators and Boilers, Slitters, Cutters, Hydraulic presses, Sheridan Presses, Dryers. Address Box 51-88 care Paper Trade Journal. TF

WANTED—W & P Shredders, Evaporators, Generators and Boilers, Slitters, Cutters, Hydraulic presses, Sheridan Presses, Dryers. Address Box 51-89 care Paper Trade Journal. TF

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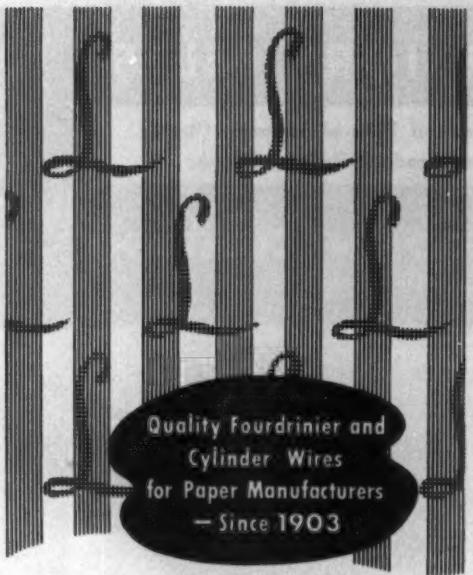

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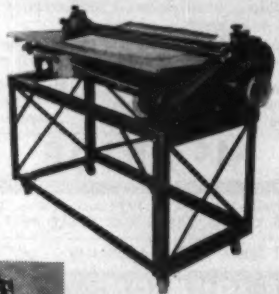

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D. J. Murray Mfg. Co.
Moore & White Co.
The Sandy Hill Iron & Brass Works
Valley Iron Works Co.
Shartle Brothers Machine Co

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Appleton Machine Co.
Carthage Machine Co.
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The Moore & White Co.
Shartle Brothers Machine Co
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The Moore & White Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co
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Downingtown Mfg. Co.
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Mordden Machines Co.
J. J. Ross Company
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Shartle Brothers Machine Co
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Rice Barton Corporation
Shartle Brothers Machine Co.
Valley Iron Works Co.

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Virginia Smelting Co.

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Perkins & Sons, Inc., B. F.
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Niagara Alkali Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

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Kalamazoo Tank & Silo Co.
Moore & White Co.
Murray Mfg. Co., D. J.
Walworth Company

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Combustion Engineering-Superheater, Inc.

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Gus Reidel & Son
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Black Clawson Company
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Farrel-Birmingham Co., Inc
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Edward J. McBride
The Moore & White Co.
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J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co
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American Cyanamid Co
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Carthage Machine Co.
Dilts Machine Works
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Farrel-Birmingham Co.
Hamblett Machine Co.
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Magnus Metal Corp.
Michigan Steel Casting Co.
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The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co
Smith & Winchester Mfg. Co
Valley Iron Works Co.
Walworth Company

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Shartle Brothers Machine Co.

CHAINS
Stephens-Adamson Mfg. Co.

CHEMICAL COTTON PULP
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Hooker Electrochemical Co.
The Kinsley Chemical Company
Monsanto Chemical Company
National Aluminate Corp.
Naugatuck Chemical Division of U. S. Rubber Co.
Niagara Alkali Company
Nopco Chemical Co.
Pittsburgh Plate Glass Co., Columbia Chemical Division
Reichhold Chemicals, Inc.
Rohm & Haas Co.
Virginia Smelting Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

CHESTS
The Bagley & Sewall Company
E. D. Jones & Sons Co.
Kalamazoo Tank & Silo Co.
Shartle Bros. Mch. Co.

CLEANING MATERIALS
American Cyanamid Company Industrial Chemicals Division
The Dow Chemical Company
E. I. du Pont de Nemours & Co., Inc.
General Dyestuff Corp.
Monsanto Chemical Company
Nopco Chemical Co.
Pittsburgh Plate Glass Co.
Wyandotte Chemicals Corp., J. B. Ford Division

CLUTCHES
Appleton Machine Co.
The Bagley & Sewall Company
Black Clawson Company
Farrel-Birmingham Co.
Moore & White Co.
D. J. Murray Mfg. Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Bros. Mch. Co.
Stephens-Adamson Mfg. Co.

COATING MACHINERY
Ditts Machine Works
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
The Mayer Machine Co., Inc.
Moore & White Co.
Potdevin Machine Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corporation, John
Weber, Herman G., & Co., Inc.

COATING MATERIALS
American Cyanamid Company Industrial Chemicals Division
E. I. Du Pont De Nemours & Co., Inc.
B. F. Goodrich Chemical Co.
The Goodyear Tire & Rubber Company
Hercules Powder Co.
J. M. Huber Corp.
Monsanto Chemical Company
Naugatuck Chemical Division of U. S. Rubber Co.
Nopco Chemical Co.
Pittsburgh Division, Libbey-Owens-Ford Glass Co.
Reichhold Chemicals, Inc.
Wyandotte Chemicals Corp., Michigan Alkali Div.

COGS
The N. P. Bowsher Co.

COMPLETE FOURDRINIER ROLL GRINDING
Manchester Machine Co.

COMPRESSORS
Allis-Chalmers Mfg. Co.
Nash Engineering Co.
Roots-Connersville Blower Corp.

CONDENSATE FILTERS
Hungerford & Terry, Inc.
The Permutit Company

CONSISTENCY REGULATORS
Askania Regulator Co.
Bird Machine Company
DeZurik Shower Company
Paper & Industrial Appliances

CONSTRUCTION CONTRACTORS
C. M. Guest & Sons

CONSULTING ENGINEERS
Black Clawson Company
Ditts Machine Works
Ebasco Services
Frank W. Egan & Co.
Alvin H. Johnson & Co., Inc
Main, Inc., Chas. T.
The Rust Engrg. Co.
Shartle Bros. Mch. Co.
J. E. Sirrine & Co.
Frank C. Vaughan
John Waldron Corp.
H. G. Weber & Co., Inc.

CONTINUOUS DIGESTER
Paper & Industrial Appliances

CONTROLLERS
Black Clawson Company
The Brown Instrument Co.

CONTROLS
The Brown Instrument Co.
Johnson Corp.
Foirier Control Co.
Shartle Bros. Mch. Co.
Stickle Steam Specialties Co

CONVERTING MACHINERY
The Bagley & Sewall Company
Egan, Frank W., & Co.
John Waldron Corp.
Ditts Machine Works

CONVEYORS
Black Clawson Company
Murray, D. J., Mfg. Co.
Ross Engineering Corp., J. O.
Shartle Brothers Mch. Co.
Stephens-Adamson Mfg. Co.

CORES
Elixman Paper Co.
Smith & Winchester Mfg. Co
Sonoco Products Co.

CORROSION RESISTANT
Amercoat Corporation

COTTON LINTER
Alpha Cellulose Corp.
Railway Supply & Mfg. Co.

COTTON PULP
Alpha Cellulose Corp.

COUCH ROLLS
Beloit Iron Works

COUPLINGS
The Bagley & Sewall Company
Black Clawson Company
Farrel-Birmingham Co., Inc
E. D. Jones & Sons Co.
Lovejoy Flexible Coupling Co.
Moore & White Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co
Valley Iron Works
Waldron Corp., John

CRANES
Cleveland Crane & Engrg. Co
Whiting Corp.

CURL TESTER
Thwing-Albert Instrument Co

CUTTERS
The Bagley & Sewall Company
Beloit Iron Works
Black Clawson Company
Ditts Machine Works
Gibbs-Brower Company, Inc
Graphic Arts International Corp.
Thomas W. Hall Co.
Harris-Seybold Co.
Jagenberg-Werke Akt. Ges.
Moore & White Co.
Perkins & Son, Inc., B. F.
Rice Barton Corporation
The Sandy Hill Iron & Brass
Taylor, Stiles & Co.
Works
The Smith & Winchester Mfg Co.

CYLINDER MOULDS
Manchester Machine Co
Rice Barton Corporation

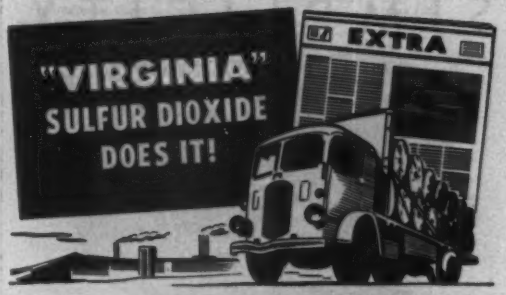
CYLINDERS
M. W. Jenkins Sons, Inc.

DAMPENERS
Perkins & Son, Inc., B. F
Valley Iron Works Co.

DECKLE WEBBING
Williams-Gray Co.

DEFIBRATORS
American Defibrator Co.

DE-INKING
Ditts Machine Works
General Dyestuff Corp.
Kinsley Chemical Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.



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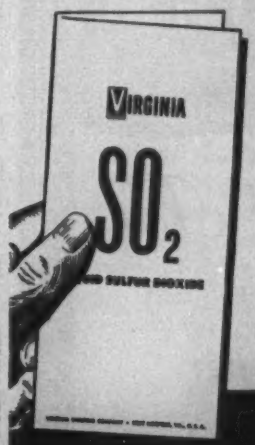

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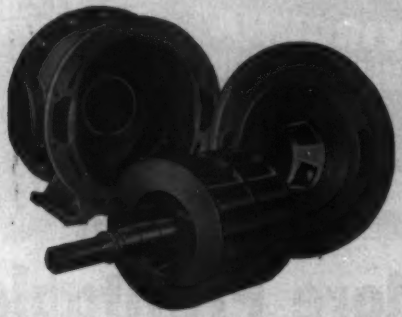

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The Permutit Company

EMULSIFIERS
Wyandotte Chemicals Corp., Michigan Alkali Div.

DENSOMETERS
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W. & L. E. Gurley

DESIGN CONSTRUCTION
Rhasco Services

DETERGENTS
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General Dyestuff Corp.
Monsanto Chemical Company
Nopco Chemical Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

DEWAXING CHEMICALS
American Cyanamid Company Industrial Chemicals Division
General Dyestuff Corp.
Nopco Chemical Co.

DIFFERENTIAL SCALES
Thwing-Albert Instrument Co.

DIGESTERS
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Blaw Knox Company
Chicago Bridge & Iron Co.
Combustion Engineering-Superheater, Inc.
Lockwood
Paper & Industrial Appliances
Pusey & Jones Corp.

DISPERSING AGENTS
Calgon, Inc.
General Dyestuff Corp.
Monsanto Chemical Company
National Aluminate Corp.
Nopco Chemical Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

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Lodding Engineering Corp.
The Moore & White Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

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Bird Machine Company
Lodding Engrg. Corp.
The Moore & White Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co
Simonds Saw & Steel Co.

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Lockerweld
The Moore & White Co.
Murray Mfg. Co., D. J.
J. J. Ross Company
Red-Ray Mfg. Co., Inc.
Rice Barton Corporation
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

DRILLED SUCTION COUCH ROLLS
Manchester Machine Co.

DRILLED SUCTION DRUM ROLLS
Manchester Machine Co.

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Appleton Machine Co.
The Bagley & Sewall Company
Beloit Iron Works
Bird Machine Co.
Black Clawson Company
Dilts Machine Works
Downingtown Mfg. Co.
Fairbanks, Morse & Co.
Farrel-Birmingham Co.
General Electric Company
Gibbs-Brower Company, Inc.
Moore & White Co.
Murray, D. J., Mfg. Co.
Pusey & Jones Corp.
Rice Barton Corporation
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Bros. Mch. Co.
Stephens-Adamson Mfg. Co.
Valley Iron Works Co.
Westinghouse Electric Corp.

DRUM WINDERS
Manchester Machine Co.
Rice Barton Corporation

DRYER DRAINAGE
Stickle Steam Specialties Co.

DRYER ROLL PYROMETER
Thwing-Albert Instrument Co.

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Downingtown Mfg. Co.
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M. W. Jenkins Sons, Inc.
E. D. Jones & Sons Co.
Moore & White Co.
D. J. Murray Mfg. Co.
John Waldron Corp.

DUSTING BRUSHES
M. W. Jenkins Sons, Inc.

DYESTUFFS
American Cyanamid Company
Calco Chemical Div.
Bunge Pulp & Paper Co.
Ciba Company
E. I. du Pont de Nemours & Co., Inc.
Geigy Co., The
General Dyestuffs Corp.
National Aniline Division, Allied Chemical & Dye Corp.

ELECTRIC HYGROMETER
Thwing-Albert Instrument Co.

EMBOSSING MACHINES
Dilts Machine Works
Egan, Frank W., & Co.
John Waldron Corp.

EMBOSSING ROLLS
The Appleton Machine Co.
Gibbs-Brower Company, Inc.
Holyoke Machine Co.
Northern Engraving & Mch. Co
B. F. Perkins & Son, Inc.
John Waldron Corp.
Wheeler Roll Co.

EMULSIFIERS
General Dyestuff Corp.
Nopco Chemical Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp.

ENZYMES
Rohm & Haas Co.
Vanderbilt Co., R. T.

EVAPORATORS
Davis Engrg. Corp.
Gaulic-Birmingham Mfg. Co. Inc.
Murray, D. J., Mfg. Co.
Swenson Evaporator Co., Div. of Whiting Corp.

EXPANDERS
Mount Hope Machinery Co.

FANS
General Electric Co.
B. F. Perkins & Son, Inc.
Ross Engineering Co., J. O.

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Hoff Company, Inc.
Merrick Scale Mfg. Co.
The Permutit Company
Stephens-Adamson Mfg. Co.

FELTS
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Asten-Hill Mfg. Co.
Draper Bros. Corp.
Huyck & Son, F. C.
Lockport Felt Co.
Morey Paper Mill Supply Co.
Sinzler & Benninghofen
Waterbury Felt Co.
Waterbury, H., & Sons Co.
Williams-Gray Co.

FELT CLEANERS
Calgon, Inc.
General Dyestuff Corp.
Nopco Chemical Co.

FELT CONDITIONERS
Bird Machine Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works

FELT GUIDES
Black Clawson Company
Frank W. Egan & Co.
Gilbert & Nash Co.
Moore & White Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John

FILLERS
American Cyanamid Company, Industrial Chemicals Division
A. M. Macmillin & Son, Inc.
Vanderbilt Co., R. T.
Wyandotte Chemicals Corp., Michigan Alkali Div.

FILTERS
Bird Machine Company
Holyoke Machine Co.
J. M. Huber Corp.
Hungerford & Terry, Inc.
Johnson Corp.
Moore & White Co.
I. O. Ross Engrg. Corp.
The Sandy Hill Iron & Brass Works
Walworth Company

FITTINGS
The Bagley & Sewall Company
Crane Company
Shartle Bros. Mch. Co.
Walworth Company

FLEXIBLE COUPLINGS
Egan, Frank W., & Co.
Lovejoy Flexible Coupling Co.
John Waldron Corp.

FLOORING, GRATING AND TREADS
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Nortco Co.

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Rice Barton Corporation
The Sandy Hill Iron & Brass Works

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Elwell Parker Elec. Co.
Yarnall-Waring Co.

FORMATION TESTERS
Tiwing-Albert Instrument Co.
Williams Apparatus Co., Inc.

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Black Clawson Company
Downingtown Mfg. Co.
The Moore & White Co.
Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

FRIENDNESS TESTERS
Testing Machines, Inc.
Williams Apparatus Co.

FURNACES
Hoeft Company, Inc.

GASKETS
The Goodyear Tire & Rubber Company

GEARS
The Bagley & Sewall Company
Black Clawson Company
De Laval Steam Turbine Co.
Downingtown Mfg. Co.
Frank W. Egan & Co.
Farrel-Birmingham Co.
E. D. Jones & Sons Co.
Moore & White Co.
D. J. Murray Mfg. Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Stroh Process Steel Co.
Valley Iron Works Co.
Westinghouse Electric Corp.
Western Gear Works

GRAPPLES
Blaw-Knox Company

GRAVITY FILTERS
Holyoke Machine Co.

GRINDERS
Carthage Machine Co.
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
Lobdell United Co.
Norton Company
Samuel C. Rogers and Company
The Sandy Hill Iron & Brass Works

GRINDING WHEELS
Norton Company
Simonds Abrasive Co.

GUIDES
The Bagley & Sewall Company
Egan, Frank W., & Co.
Gilbert & Heath Co.
The Moore & White Co.
Mount Hope Machinery Co.
Rice Barton Corporation
John Waldron Corp.

GUMMING MACHINES
Ditts Machine Works
Egan, Frank W., & Co.
The Sandy Hill Iron & Brass Works

GUMS
National Starch Products, Inc.
Stein-Hall Co., Inc.

HEAT EXCHANGERS AND RECOVERY SYSTEMS
Stebbins Steam Specialties Co.
Westinghouse Electric Corp.

HEATING, VENTILATING & AIR CONDITIONING
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E. D. Jones & Sons Co.
General Electric Co.
D. J. Murray Mfg. Co.
Rud-Ray Mfg. Co., Inc.
Sess Engineering Corp., J. G.
Stebbins Steam Specialties Co.
Valley Iron Works Co.

HOSE (Air, Water, Suction, etc.)
The Goodyear Tire & Rubber Company

HUMECTANTS
Akzivin Division, Heyden Chemical Corp.
Hopco Chemical Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

IMPREGNANTS
American Cyanamid Company, Industrial Chemicals Division
B. F. Goodrich Chemical Co.

INDENTING MACHINES
Ditts Machine Works

INDUSTRIAL TRACTORS
Clark Equipment Company, Industrial Truck Division
Tournator Corp.

INKOMETER
Tiwing-Albert Instrument Co.

INSTRUMENTS, TESTING AND MEASURING
Bruce Instrument Co.
Bunge Pulp & Paper Co.
Cambridge Instrument Co.
General Electric Company
W. & L. E. Gurley
R. F. Perkins & Son
Sheffield Corp.
Taylor Instrument Cos.
Testing Machines, Inc.
Tiwing-Albert Instrument Co
Williams Apparatus Co.

JOINTS
The Bagley & Sewall Company
Beloit Iron Works
Johnson Corp.
Lovejoy Flexible Coupling Co.
Rice Barton Corporation
Shartle Bros. Mch. Co.

JORDAN FILLINGS
Appleton Machine Co.
Beloit Brothers Mfg. Co.
E. D. Jones & Sons Co.
Shartle Bros. Mch. Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

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Black Clawson Company
Ditts Machine Works, Inc.
Hamblet Machine Co.
Hoppenstall Company
E. D. Jones & Sons Co.
The Moore & White Co.
Simonds Saw & Steel Co.
Taylor Stiles & Co.
Valley Iron Works Co.

KRAFT WRAPPING PAPERS
Canadian Newsprint Supply Co.
Transamerican Industries

LABORATORY CORRUGATOR
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LABORATORY EQUIPMENT
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Bauer Brothers Co.
Bird Machine Company
Ditts Machine Works
W. & L. E. Gurley
Egan, Frank W., & Co.
E. D. Jones & Sons Co.
Taylor Instrument Companies
Testing Machines, Inc.
Valley Iron Works Co.
John Waldron Corp.
Williams Apparatus Co., Inc.

LAMINATING MACHINES
The Bagley & Sewall Company
Ditts Machine Works
Egan, Frank W., & Co.
Rice Barton Corporation
John Waldron Corp.

LAY BOYS
Ditts Machine Works
Gibbs-Brower Company, Inc.
Hamblet Machine Co.
Moore & White Co.

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Clark Equipment Company, Industrial Truck Division

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The Wellman Engrg. Co.

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Lobdell Co.
Stephens-Adamson Mfg. Co.
Testing Machines, Inc.

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Moore & Munger
Sun Oil Company

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Transamerican Industries

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Industrial Truck Division
Johnson Corporation
The Moore & White Co.
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Clark Equipment Company
Industrial Truck Division

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Manchester Machine Co.
Rice Barton Corporation

PAPER MACHINES
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Bagley & Sewall Co.
Black Clawson Company
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
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Lakeneweld
Moore & White Co.
Pusey & Jones Corp.
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The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.

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E. D. Jones & Sons Co.
The Moore & White Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Valley Iron Works Co.

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Hudson Sharp Machine Co.
Jagenberg-Werke Akt. Ges.
Langston Co., Samuel M.

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Moore & Munger
Sun Oil Company

PARAFFIN WAX EMULSIONS
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Black Clawson Company
Dilts Machine Wks.
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Murray, D. J., Mfg. Co.
Moore & White Co.
Potdevin Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John

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F. L. Smidth & Co.

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pH METERS
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Tinwing-Albert Instrument Co.

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Babcock & Wilcox Co.
Crane Company
Grinnell Company
Michigan Steel Casting Co.
National Tube Co.
Walworth Company

PIPE FITTINGS
Armco Drainage & Metal Products, Inc.
Crane Company
Grinnell Company
Michigan Steel Casting Co.
Walworth Co.

PITCH CONTROL
American Cyanamid Company
Industrial Chemicals Division
General Dyestuff Corp.
Monsanto Chemical Company
National Aluminate Corp.
Nopco Chemical Co.
Rohm & Haas Co.

PLASTICIZERS
American Cyanamid Company
Industrial Chemicals Division
Aktivin Division, Heyden Chemical Corp.
B. F. Goodrich Chemical Co.
Naugatuck Chemical
Division of U. S. Rubber Co.
Nopco Chemical Co.

PLATERS
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Perkins & Son, Inc., B. F.

PLATES
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Babcock & Wilcox Co.
J. O. Ross Engrg. Corp.
Lakeneweld Division
Lukens Steel Company
Timken Roller Bearing Co.

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Black Clawson Company
E. D. Jones & Sons Co.
Shartle Brothers Machine Co.

POPE TYPE REELS
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Manchester Machine Co.
Rice Barton Corporation

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Testing Machines, Inc.
Tinwing-Albert Instrument Co.

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General Dyestuff Corp.

PRESS ROLLS
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Rice Barton Corporation

PRESSURE FILTERS
Holyoke Machine Co.

PRESSURE VESSELS
Chicago Bridge & Iron Co
Combustion Engineering-Superheater, Inc.

PRESSES
Black Clawson Company
Dietz Machine Works
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc
Thomas W. Hall Co.
The Moore & White Co.
Potdevin Machine Co.
Rice Barton Corporation
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co
Valley Iron Works Co.
Waldron Corp., John
H. G. Weber & Co., Inc.
Williams Apparatus Co.

PULLEYS
Lovejoy Flexible Coupling Co.
Rice Barton Corporation

PULP CLASSIFIER
The Bauer Bros. Co.
Tinwing-Albert Instrument Co

PULP CLEANERS
Nichols Engrg. & Research Corp.

PULP STOCK VALVES
Crane Company
Record Pdy. & Mach. Co.
Shartle Brothers Machine Co

PULPERS
Aqmew, Inc.
Bauer Brothers Co.
Dilts Machine Works
E. D. Jones & Sons Co.
Mordon Machines Co.
Shartle Brothers Machine Co

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Brown Company
Bunge Pulp & Paper Co.
Gottesman & Co., Inc.
Lyddon & Co. (America), Inc
Parsons & Whittemore, Inc.
Perkins-Goodwin Co.
Price & Pierce, Ltd.
Pulp and Paper Trading Co
Rostigouche Co., Ltd.

PULPSTONES
Norton Company

PULP TESTERS
Paper and Pulp Testing Laboratories
Williams Apparatus Co., Inc.

PULVERIZING MILLS
Combustion Engineering-Superheater, Inc.
F. L. Smidth & Co.

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Aqmew, Inc.
The Bagley & Sewall Company
Beloit Iron Works
Black Clawson Company
Buffalo Pumps, Inc.
Byron Jackson Co.
DeLaval Steam Turbine Co.
Downingtown Mfg. Co.
Fairbanks, Morse & Co.
Gibbs-Brower Company, Inc.
Johnson Corp.
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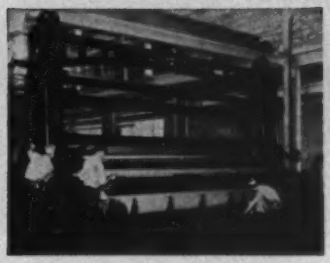


Camachine means dependability, speed and top roll quality at the winding end of your paper machine.

◀ SCORE-CUT SHEAR-CUT ▶

Choose either Camachine air-operated or integral type score-cut slitters, or Camachine shear-cut slitting units.

CAMACHINES EVERYWHERE! More than 400 paper and paperboard mills in the United States alone have one or more Camachines in service. More paper of all types is processed into rolls on Camachine equipment than on any other type of slitting and winding machinery.

CAMACHINES EVERY TIME! Rolls produced on Camachines include over 80 different product classifications, such as newsprint, book, kraft and wrapping papers; bristol and box boards; cigarette, gummed and novelty papers; laminated, sensitized, roofing and many other types of paper and paperboard.

CAMACHINES ALL THE TIME! Every new Camachine engineering development is deeply rooted in Cameron Machine Company's sixty years of experience and leadership in the manufacture of more efficient roll production equipment. Cameron research engineers will be pleased to consult with you regarding faster roll production at lower cost, and improved roll quality.

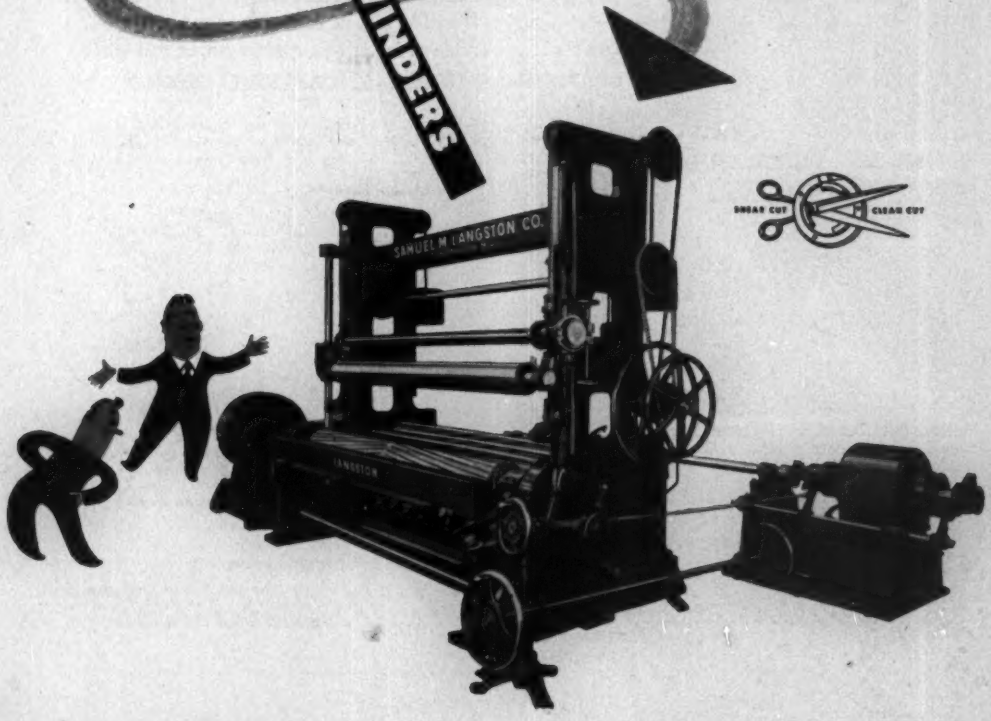
CAMERON MACHINE COMPANY • 61 POPLAR STREET • BROOKLYN 2, N.Y.

Four hundred dots on this map indicate, by state, the approximate location of paper and board mills where one or more Camachines are used.

AA-240

You can depend on Camachines®

LANGSTON SLITTERS AND WINDERS

For many Winder or Rewinder jobs, from 62" to 122", the Langston "CA" is ideal. It can be built to operate at speeds up to 3000 FPM and handle rolls up to 60" in diameter or, on special order, 72". For complete details on this and other sizes, ask for Bulletin 204.

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